

# **CHAPTER 7**

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## **RECOMMENDATIONS**

## CHAPTER 7 – RECOMMENDATIONS

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The final chapter of the Nebraska Aviation System Plan sets forth the recommendations for the development of the State's aviation infrastructure. Previous chapters of this study have included the following:

- ❑ Chapter One – Criteria and Benchmarks
- ❑ Chapter Two – Inventory
- ❑ Chapter Three – Forecasts
- ❑ Chapter Four – Demand Analysis
- ❑ Chapter Five – System Adequacy Analysis
- ❑ Chapter Six – Options Analysis

The purpose of this chapter is to present the recommendations that have resulted from the analysis conducted in previous chapters.

Similar to previous chapters, the recommendations are presented according to the following four system performance criteria/goal categories established at the outset, including:

- ❑ Access
- ❑ Economic
- ❑ Physical
- ❑ Social/Cultural

### ACCESS RECOMMENDATIONS

There were four objectives identified under the access goal category. These included the following:

- ❑ Airports serving population centers
- ❑ Airports accommodating medical flights
- ❑ All-weather/instrument coverage
- ❑ Surface access of airports

Options to address the deficiencies, as well as surpluses, for each of the four access objectives are discussed below.

#### Airports Serving Population Centers

The adequacy and deficiencies analysis revealed that the existing Nebraska aviation system serves 98.9 percent of the State's population using 30-minute drive times from all 90 airports included in the system. In terms of land area, the system's drive time coverage is 84 percent of the State's total land area. This indicates that the existing system provides sufficient coverage in general terms. More importantly was the provision of service to population centers throughout the State and the consideration of the types of airports that provided coverage to these centers. There were 33 population centers over 5,000 persons identified in the previous chapter. The analysis revealed that service by existing airports categorized as National and Regional, in terms of 30-minute drive times, is provided to all 33 of these communities. The coverage is actually overlapping in several areas of the State when the 30-minute drive times for both the National and Regional airports are considered.

In addition to examining population centers, the actual coverage provided by the various airport classifications was reviewed to determine if, from the State's perspective, sufficient coverage was being provided across the State's geographic area. Therefore, an analysis of each classification was conducted to evaluate deficiencies, as well as surpluses. This analysis is important to the study for several reasons. The demand analysis that was used to initially stratify the airport system into levels was not based on existing facilities and did not review the ability of the airports to meet the standards of the classification level to which they were categorized. This process also did not examine, from a geographic standpoint, how the stratification provided coverage to the State. As the system was stratified and the coverage provided by the airports was reviewed, significant duplication in service was identified. The analysis of the State's need for airports in the various categories, including the need for airports to serve more important roles than currently identified (as well as lesser roles), is part of this chapter.

The options analysis focused on how changing airport roles would reduce some of the duplication in services and improve coverage in areas where voids were based on the initial stratification of the system. In terms of National airports, it was noted that additional coverage was needed in the north-central part of the State and that three airports in the Omaha area were not needed. Therefore, Valentine was recommended to move to National status, and North Omaha was recommended to move to Local status. In addition, it was recommended that York and Plattsmouth be moved to the National category to provide additional coverage in the high-growth areas near Omaha and Lincoln. While Millard serves an important role, the airport's inability to expand to meet National standards was noted and the airport was recommended to move to the Regional category.

In terms of the Regional airport coverage, Ord was recommended to be included in the Regional category for coverage purposes. However, with significant duplication, several airports were recommended to move down to the Local category, including the following:

- ☐ Grant
- ☐ Cozad
- ☐ Minden
- ☐ Central City
- ☐ Aurora
- ☐ Fairbury
- ☐ Auburn
- ☐ South Sioux City

In addition, Gothenburg was moved down to the Limited category due to the duplication of service in that area. By moving these airports down to the Local category, the remaining airports in the Regional and National categories provide sufficient coverage to the majority of the State without duplication.

In the Local category, duplication also was the primary issue. It was recommended that several airports be moved to the Limited category, including:

- ☐ Rushville
- ☐ Hay Springs
- ☐ Mullen
- ☐ Chappell
- ☐ Sargent

The impact of these recommended changes in the airport stratification helps to address not only service duplication, but also the ability of the airports to meet other objectives for the system. These objectives include airports accommodating medical flights, airports serving economic/trade centers, and meeting facility and service objectives. These objectives are discussed in subsequent sections of this chapter.

### **Airports Accommodating Medical Flights**

As previously discussed, there are eight communities with identified primary hospitals that do not fall within the 30-minute drive times for the airports initially categorized as National and Regional. One of these eight communities has an airport (Ord) that has already been recommended to upgrade to Regional status based purely on the system's coverage. It is recommended that several of the airports that serve these other communities also be upgraded to Regional status in order for the State's system to meet this objective. These airports include the following:

- ❑ Ainsworth
- ❑ Albion
- ❑ Neligh

This still leaves three communities without airports to serve the primary hospitals, including Plainview, Osmond, and West Point. Once Neligh is moved to the Regional category, its 30-minute drive time touches the edges of Creighton, Plainview, and Osmond. West Point does not, however, have an airport within a 30-minute drive of the community.

Previous studies have been conducted to site an airport to serve the West Point area. These studies have not been successful in identifying an interested public sponsor for an airport in this area. It is recommended that this community be considered in the future for development of an airport to possibly meet Regional standards if a public sponsor is identified.

In addition to primary hospitals, hospitals identified by the Nebraska Department of Health and Human Services in the fall of 2001 as critical access hospitals were also examined in relation to airport locations. While many of the primary hospitals are also defined as critical access, there are additional critical access hospitals that do not meet the short-term bed definition used in this study to define primary hospitals. The following communities were identified as having either a primary or critical access hospital, but not having an identified National, Regional, or Local airport:

- ❑ Benkelman – critical access hospital
- ❑ Bridgeport – critical access hospital
- ❑ Lynch – critical access hospital
- ❑ Pawnee City – critical access hospital

Only Pawnee City has an existing airport, and this airport is currently identified as Limited. It is not expected that this objective will be met, and these communities will have to drive beyond 30 minutes to reach an airport that meets Local standards.

### **All-Weather/Instrument Coverage**

As previously discussed, it was determined that, instead of basing decisions regarding additional all-weather needs or coverage, decisions would instead be made based on the role the airport plays in the system. For example, the facility and service standards recommend that all National airports have both a

precision approach and weather reporting capabilities. Regional airports were recommended to have a non-precision approach and to also have automated weather facilities.

Specific airport projects related to all-weather/instrument coverage are identified subsequently in this chapter.

### **Surface Access of Airports**

Based on data provided by NDA through its on-site visits to the airports throughout the State, it is estimated that 27 airports in Nebraska have paved access roads. Similar to all-weather/instrument coverage, surface access is a standard that is addressed on an airport-specific basis as part of the facility and service standards. A subsequent chapter identifies specific surface access projects at the airports whose facility and service standards indicate the need for a paved access road.

## **ECONOMIC RECOMMENDATIONS**

For this study, the importance of airports to serve the State's economic and trade centers was recognized. In addition, deficiencies in the ability of the existing system to meet this objective were identified. Recommendations to address the economic deficiencies are discussed below.

### **Airports Serving Economic/Trade Centers**

Economic/trade centers were compared to 30-minute drive times for airports identified as National and Regional. The analysis revealed that the following communities with identified economic/trade centers were not located within a 30-minute drive of an airport currently identified in the National or Regional categories:

- ☐ Creighton
- ☐ Hartington
- ☐ Neligh
- ☐ Ainsworth
- ☐ Albion
- ☐ Ord
- ☐ Superior

Previous analyses have recommended that Ainsworth, Neligh, Albion, and Ord be moved to the Regional category to improve other facets of the Nebraska Aviation System. This will improve the ability of the system to serve the needs of economic/trade centers. In addition to these four communities, Superior, which has an existing Local airport serving the community, is also recommended to upgrade to Regional status in order to improve the accessibility of this economic/trade center. This still leaves Creighton and Hartington without a Regional airport, but at the edge of other airport service areas that are in the National and Regional categories.

### **Airports Meeting Business/Air Cargo Needs**

For purposes of this analysis, it was determined that if airports were developed to serve the identified economic/trade centers, it is likely that this would also enable the air cargo needs to be met. Therefore, the recommendations for the Nebraska Aviation System to meet this objective are the same as those previously discussed for the economic/trade centers.

### **Airports Meeting Agricultural Aviation Needs**

While aviation is needed for crops identified as having a high need for aerial spraying, the actual facility needs for aerial applicators are minimal compared to other industry requirements. Aerial applicators can operate on turf strips, and many are operated at private airports that service the farms.

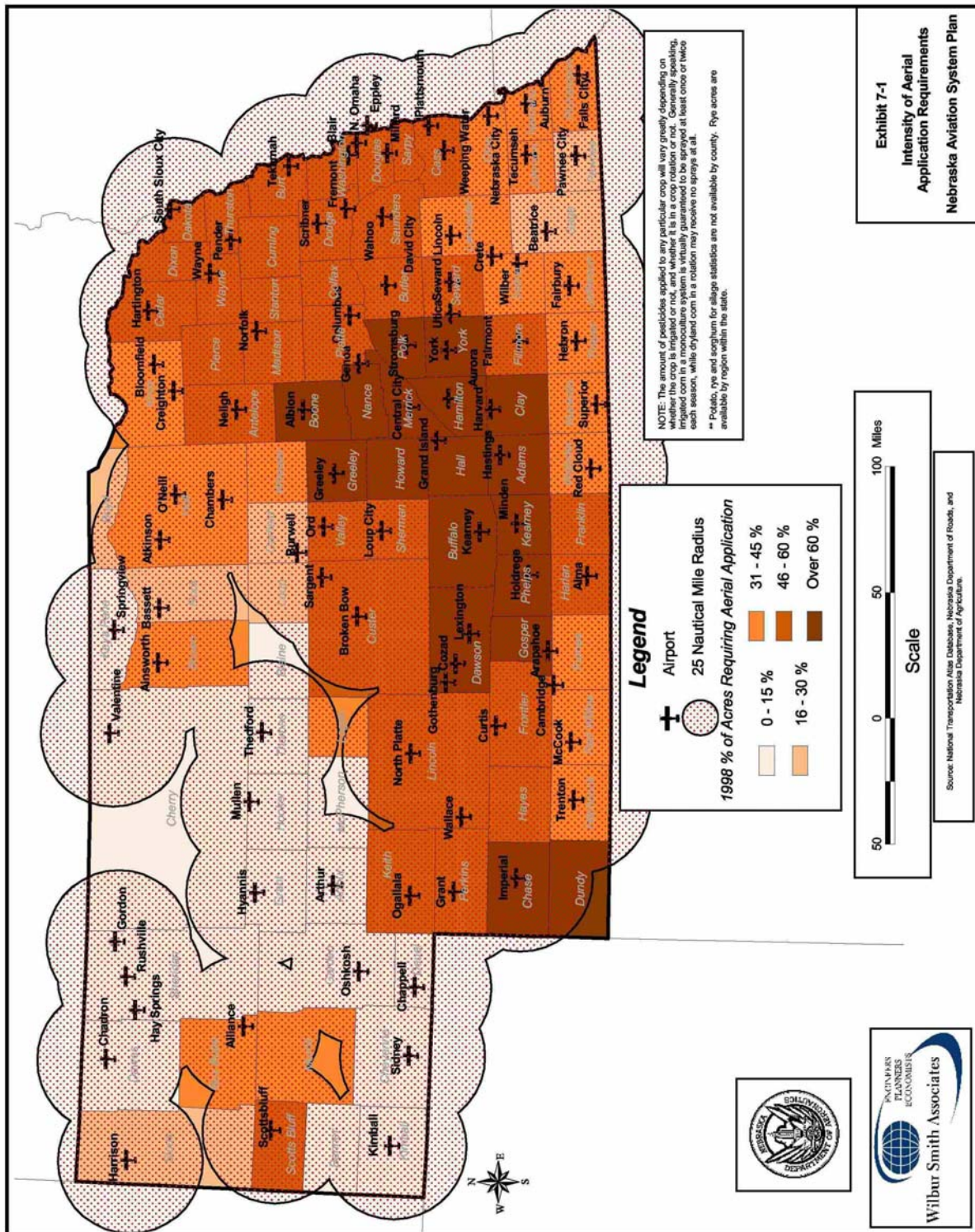
**Exhibit 7-1** presents the agricultural intensities of the counties with 25 nautical mile radii for all system airports overlaid. There are very small areas in Stanton and Cuming counties that are beyond 25 nautical mile areas, and more significant areas in Brown, Logan, Custer, Dundy, Box Butte, and Morrill counties that are also beyond the 25 nautical mile areas for the existing public-use airports. While not indicated on the map, there are private-use airports and landing strips in these areas to serve the agricultural needs. It was determined that the existing airport system was adequate to serve the agricultural aviation needs of Nebraska.

### **Recommended System**

After considering all of the various factors including serving population centers, accommodating medical needs, serving economic/trade centers, and general coverage provided by the Nebraska Aviation System, many recommendations were made about the final roles for the 90 airports in the system. It is important to consider, when all of the recommendations are considered as a whole, how the impact on the ability of the recommended system to serve the objectives be re-examined. The following briefly summarizes and depicts the recommended system and its ability to meet the objectives.

**Table 7-1** summarizes the recommended system by airport classification.

## EXHIBIT 7-1



**Table 7-1**  
**Recommended Airport System**

<b>NATIONAL</b>		<b>REGIONAL</b>	
<b>Associated City</b>	<b>Airport Name</b>	<b>Associated City</b>	<b>Airport Name</b>
Alliance	Alliance Municipal Airport	Ainsworth	Ainsworth Municipal Airport
Beatrice	Beatrice Municipal Airport	Albion	Albion Municipal Airport
Chadron	Chadron Municipal Airport	Blair	Blair Municipal Airport
Columbus	Columbus Municipal Airport	Broken Bow	Broken Bow Municipal Airport
Fremont	Fremont Municipal Airport	Crete	Crete Municipal Airport
Grand Island	Central Nebraska Regional Airport	Falls City	Brenner Field
Hastings	Hastings Municipal Airport	Gordon	Gordon Municipal Airport
Kearney	Kearney Municipal Airport	Holdrege	Brewster Field
Lincoln	Lincoln Municipal Airport	Imperial	Imperial Municipal Airport
McCook	McCook Municipal Airport	Kimball	Robert E. Arraj Field
Norfolk	Karl Stefan Memorial Airport	Lexington	Jim Kelly Field
North Platte	North Platte Regional Airport	Nebraska City	Nebraska City Municipal Airport
Omaha	Eppley Airfield	Neligh	Antelope County Airport
Plattsmouth	Plattsmouth Municipal Airport	Ogallala	Searle Field
Scottsbluff	Western Nebraska Regional/Wm. B. Heilig	Omaha	Millard Airport
Sidney	Sidney Municipal Airport	O'Neill	O'Neill Muni.-John L. Baker Field
Valentine	Miller Field	Ord	Evelyn Sharp Field
York	York Municipal Airport	Seward	Seward Municipal Airport
		Superior	Superior Municipal Airport
		Wahoo	Wahoo Municipal Airport
		Wayne	Wayne Municipal Airport

Associated City	LOCAL	Associated City	LIMITED
	Airport Name		Airport Name
Atkinson	Stuart-Atkinson Municipal Airport	Alma	Alma Municipal Airport
Auburn	Farington Field	Arapahoe	Arapahoe Municipal Airport
Aurora	Aurora Municipal Airport	Arthur	Arthur Municipal Airport
Cambridge	Cambridge Municipal Airport	Bassett	Rock County Airport
Central City	Central City Municipal Airport	Bloomfield	Bloomfield Municipal Airport
Cozad	Cozad Municipal Airport	Burwell	Cram Field
Creighton	Creighton Municipal Airport	Chambers	Perkins Memorial Airport
Curtis	Curtis Municipal Airport	Chappell	Billy G Ray Field
David City	David City Municipal Airport	Genoa	Genoa Municipal Airport
Fairbury	Fairbury Municipal Airport	Gothenburg	Quinn Field
Fairmont	Fairmont State Airfield	Greeley	Greeley Municipal Airport
Grant	Grant Municipal Airport	Harrison	Harrison Sky ranch
Hartington	Hartington Municipal Airport	Harvard	Harvard State Airfield
Hebron	Hebron Municipal Airport	Hay Springs	Hay Springs Municipal Airport
Hyannis	Grant County Airport	Mullen	Hooker County Airport
Loup City	Loup City Municipal Airport	Pawnee City	Pawnee City Municipal Airport
Minden	Pioneer Village Field	Pender	Pender Municipal Airport
Omaha	North Omaha	Rushville	Modisett Field
Oshkosh	Garden County Airport	Sargent	Sargent Municipal Airport
Red Cloud	Red Cloud Municipal Airport	Springview	Springview Municipal Airport
Scribner	Scribner State Airfield	Stromsburg	Stromsburg Municipal Airport
South Sioux City	Martin Field	Tecumseh	Tecumseh Municipal Airport
Tekamah	Tekamah Municipal Airport	Trenton	Trenton Municipal Airport
Thedford	Thomas County Airport	Utica	Flying "V" Airport
Wallace	Wallace Municipal Airport	Weeping Water	Browns Airport
		Wilber	Wilber Municipal Airport

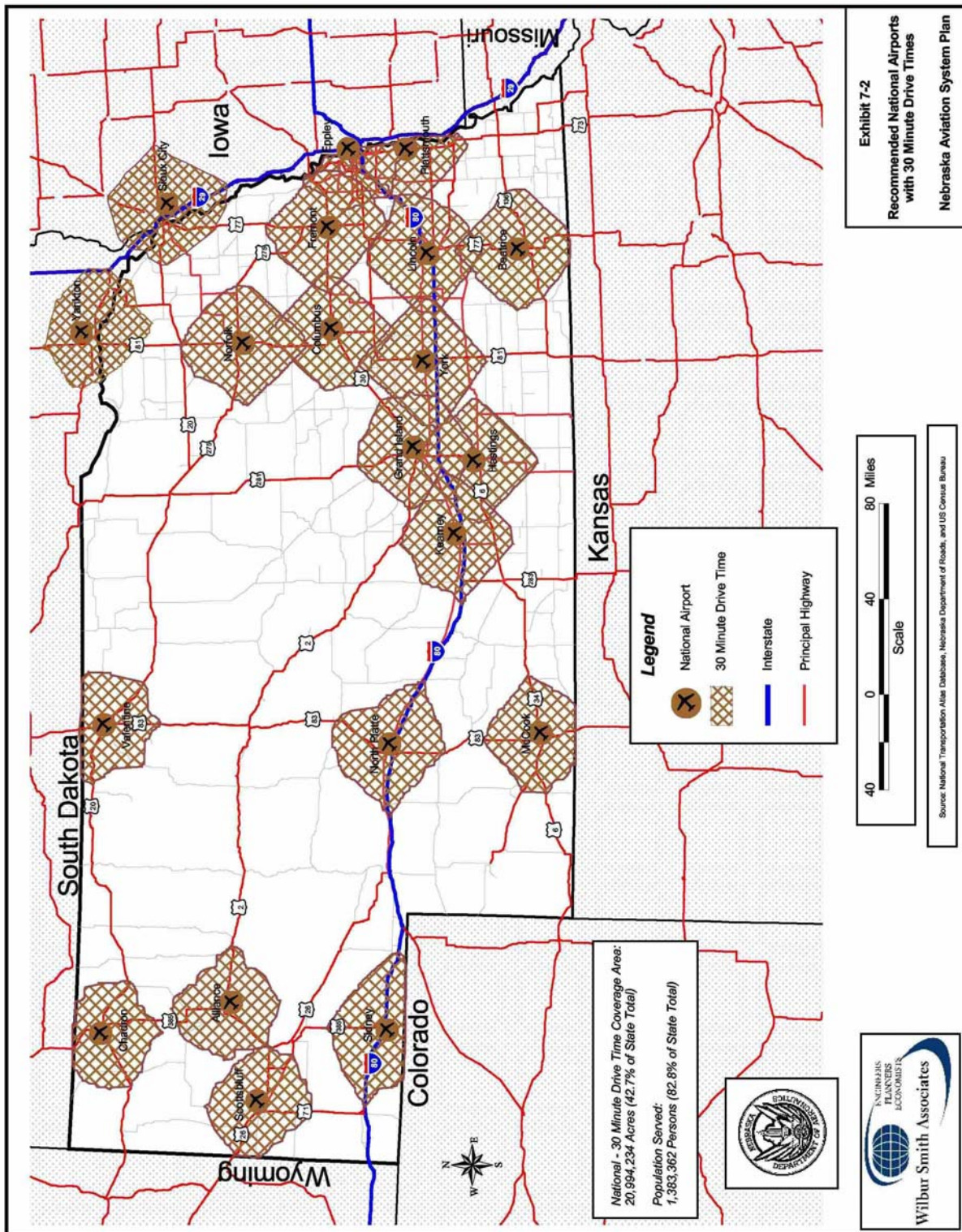
Source: Wilbur Smith Associates, Inc.

The recommended system of 18 National airports is depicted in **Exhibit 7-2**. When Sioux City and Yankton are added, the recommended system serves nearly 83 percent of the State's population in terms of 30-minute drive times from the 18 National airports in Nebraska, Sioux City, and Yankton.

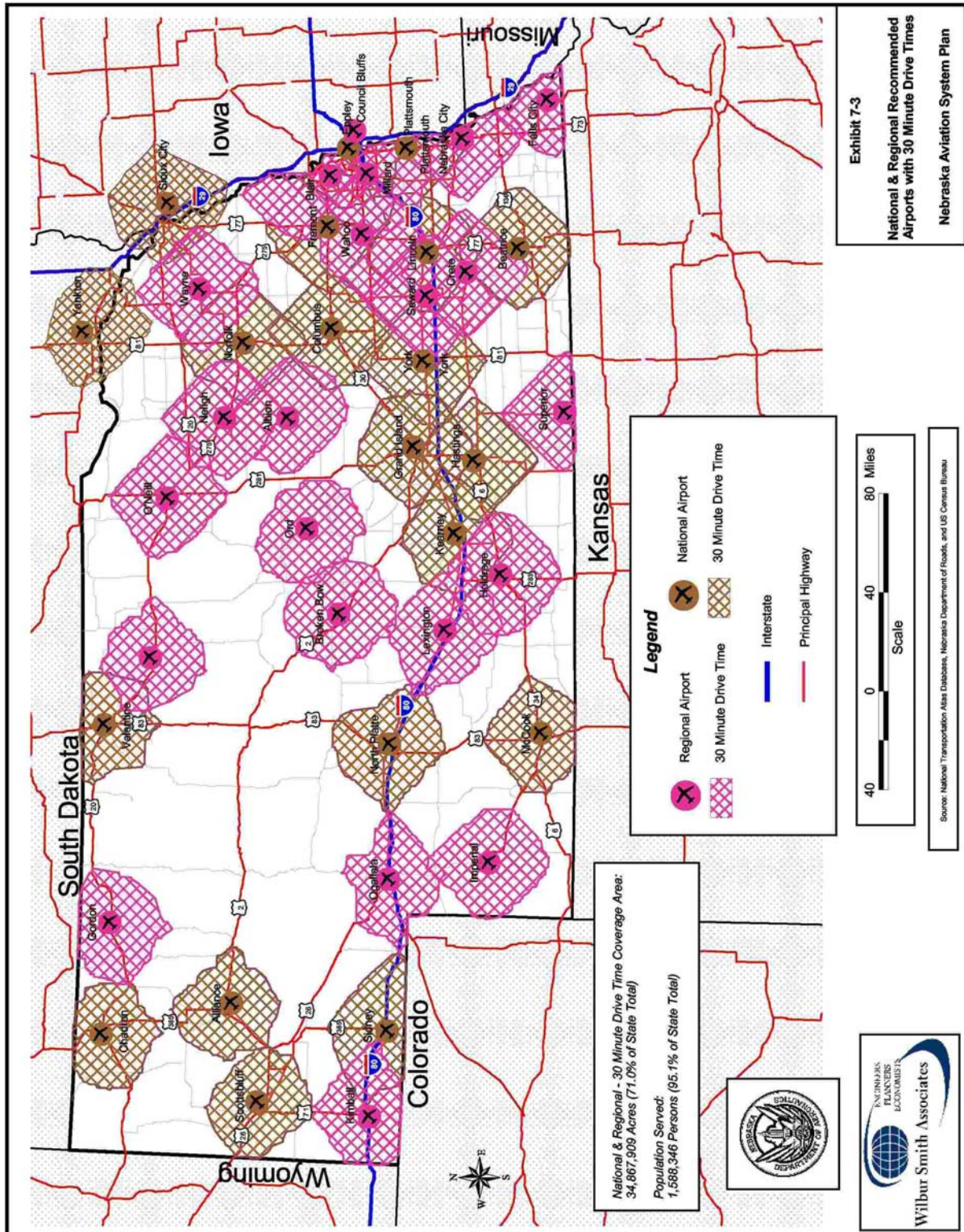
**Exhibit 7-3** depicts the recommended 21 Regional airports. The recommended National and Regional airports combined serve over 95 percent of the State's population with 30-minute drive times.

The recommended system of 25 Local airports, in addition to the National and Regional airports, are depicted in **Exhibit 7-4**. The airports in these three categories, including those National airports in Sioux City and Yankton, serve almost 100 percent of the State's population in terms of 30-minute drive times.

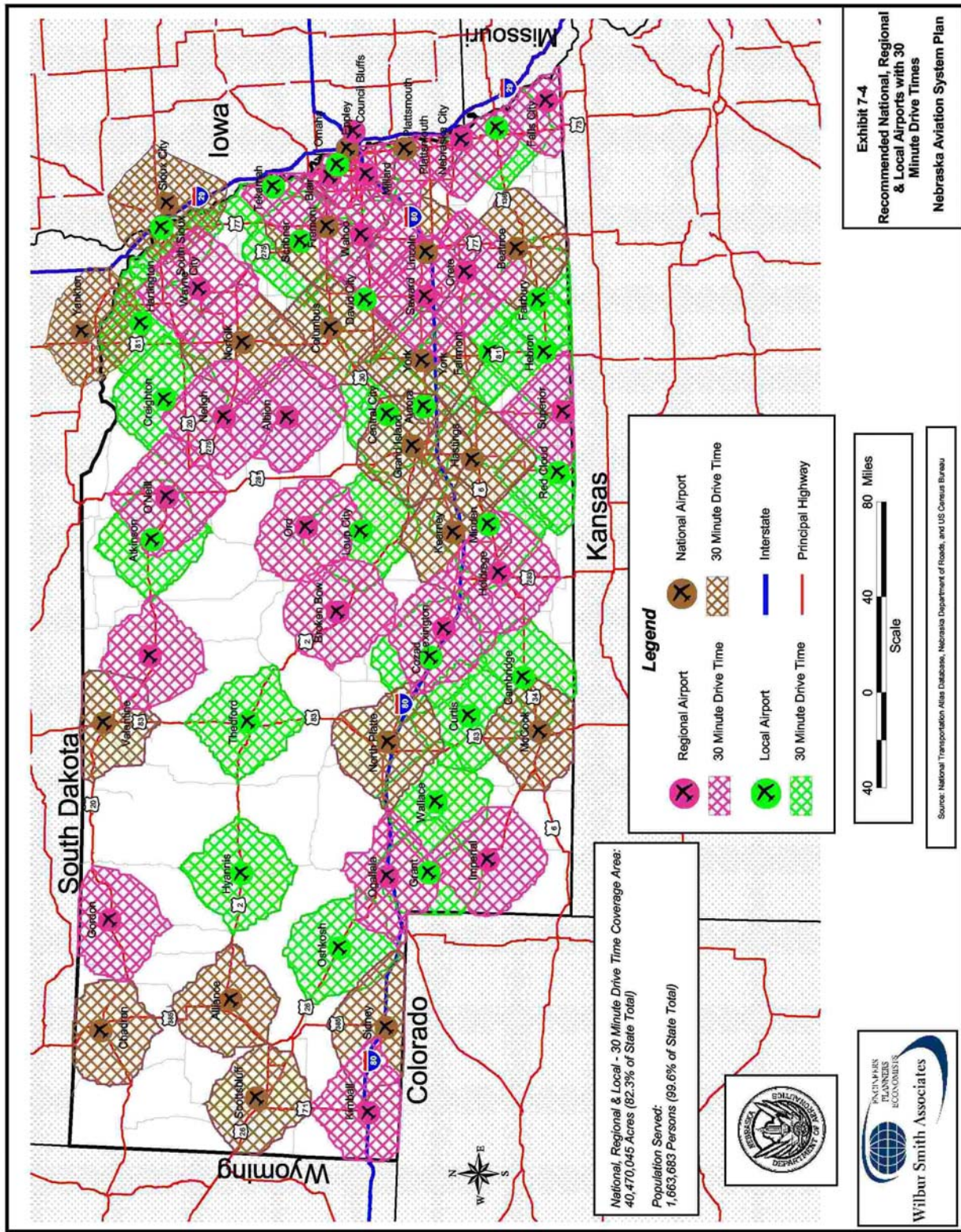
## EXHIBIT 7-2



## EXHIBIT 7-3



## EXHIBIT 7-4



**Exhibit 7-5** depicts the coverage for all four categories of airports. With the 30-minute drive times for the 26 Limited airports added to those for the other three categories, almost 100 percent of the State's population is within a 30-minute drive of an airport in Nebraska's recommended system.

**Exhibit 7-6** depicts the recommended system of airports delineated without service areas.

With the recommended changes in classifications, previous analyses were revisited to ensure that the classifications continued to serve the objectives set forth for the NASP. **Exhibit 7-7** shows the 33 population centers with more than 5,000 persons, as well as the recommended National and Regional drive times. The recommended system continues to provide adequate access to all 33 population centers.

**Exhibit 7-8** presents the medical accessibility analysis with the recommended National and Regional airport coverages imposed over the primary hospital locations. There are several hospital locations that are at the edge of the recommended system of National and Regional airports including Creighton, Plainview, Osmond, Cambridge, Tecumseh, and Fairbury. West Point continues to be located beyond the 30-minute drive time of any of the recommended National and Regional airports.

**Exhibit 7-9** shows the critical access hospitals and continues to show the same four communities outside the service area of a recommended National, Regional, or Local airport. These communities include Benkelman, Bridgeport, Lynch, and Pawnee City.

**Exhibit 7-10** presents the economic trade center data in terms of communities with net taxable retail sales in excess of \$12 million and the locations of the recommended National and Regional airports. As noted in previous analyses, the following communities continue to be located outside the service areas of recommended National and Regional airports:

- ❑ Bridgeport
- ❑ Creighton
- ❑ Fairbury
- ❑ Geneva
- ❑ Hebron
- ❑ West Point

Most of these communities are just beyond the 30-minute drive, with West Point being the farthest removed. As noted in an earlier section, previous studies have been conducted to site an airport to serve the West Point area. These studies have not been successful in identifying an interested public sponsor for an airport in this area. It is recommended that this community be considered in the future for development of an airport to possibly meet Regional standards if a public sponsor is identified.

The recommended system improves the overall accessibility and economic characteristics of the Nebraska Aviation System, but will continue to have small pockets of the State that do not have airport facilities to meet the identified objectives for the system.

## PHYSICAL RECOMMENDATIONS

With many changes in roles for airports in the Nebraska Aviation System, the ability of the recommended system to meet facility and service standards was re-evaluated. While several airports have been identified to take on more demanding roles, many of the airports were actually shifted down due to duplication in

EXHIBIT 7-5

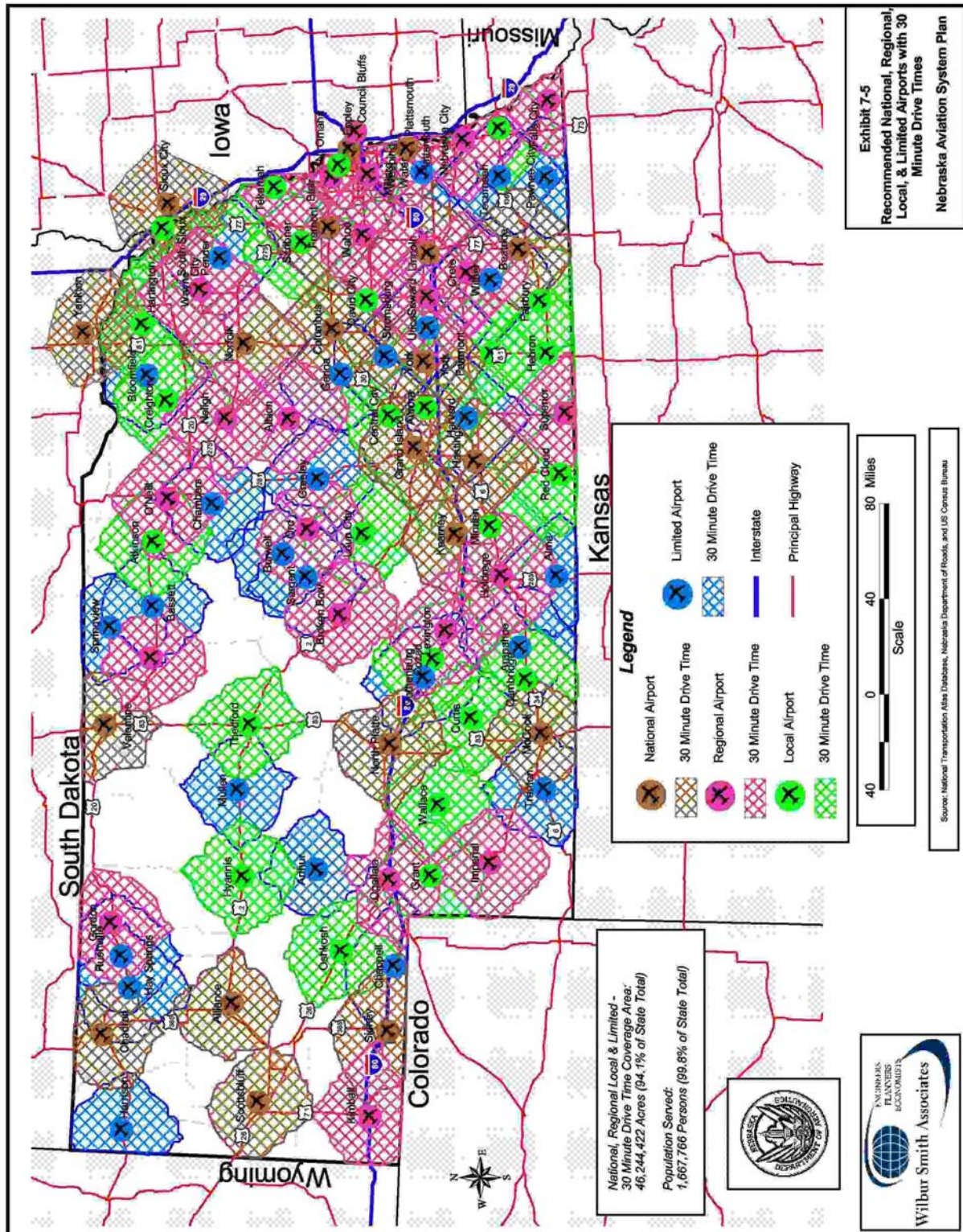


EXHIBIT 7-6

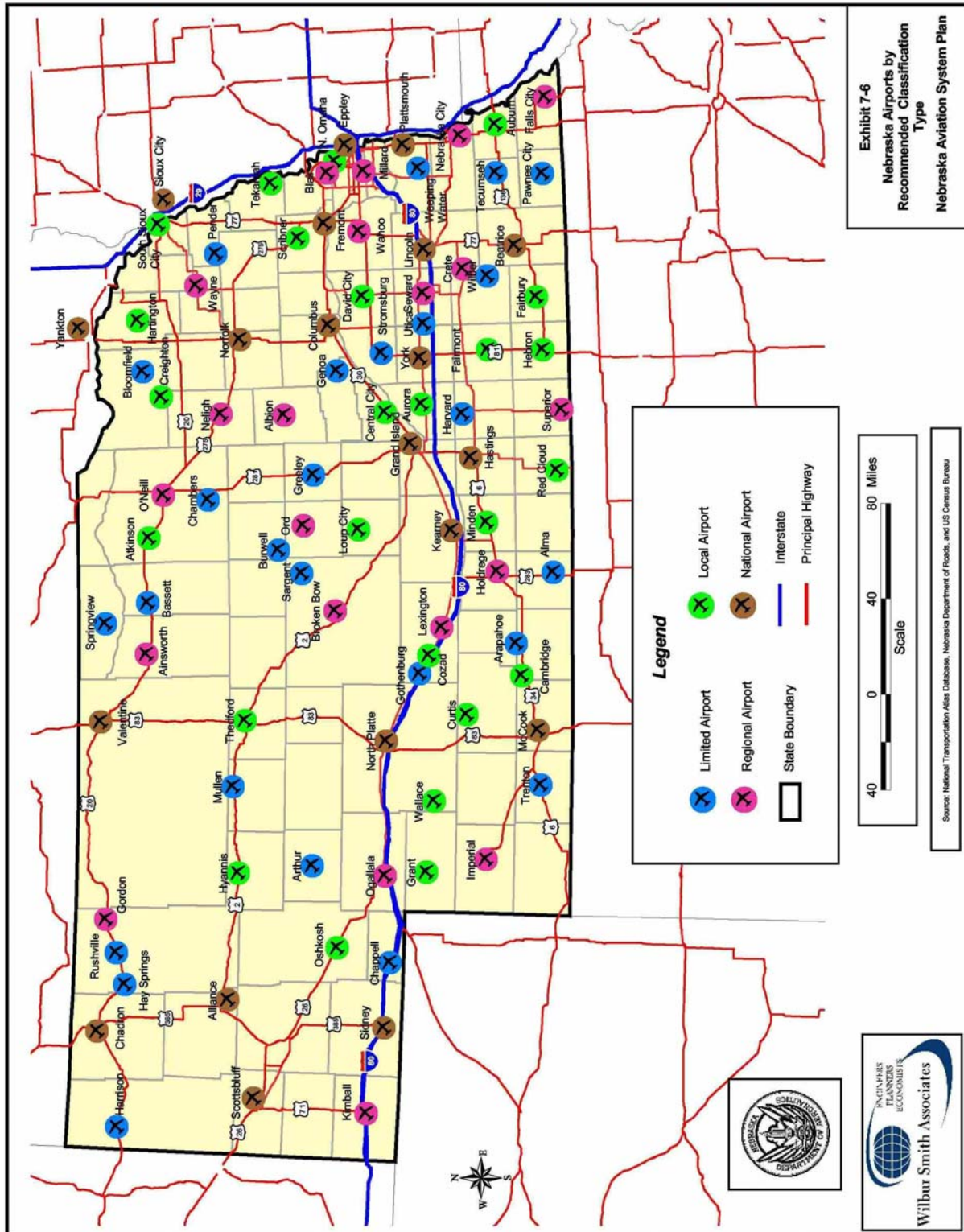


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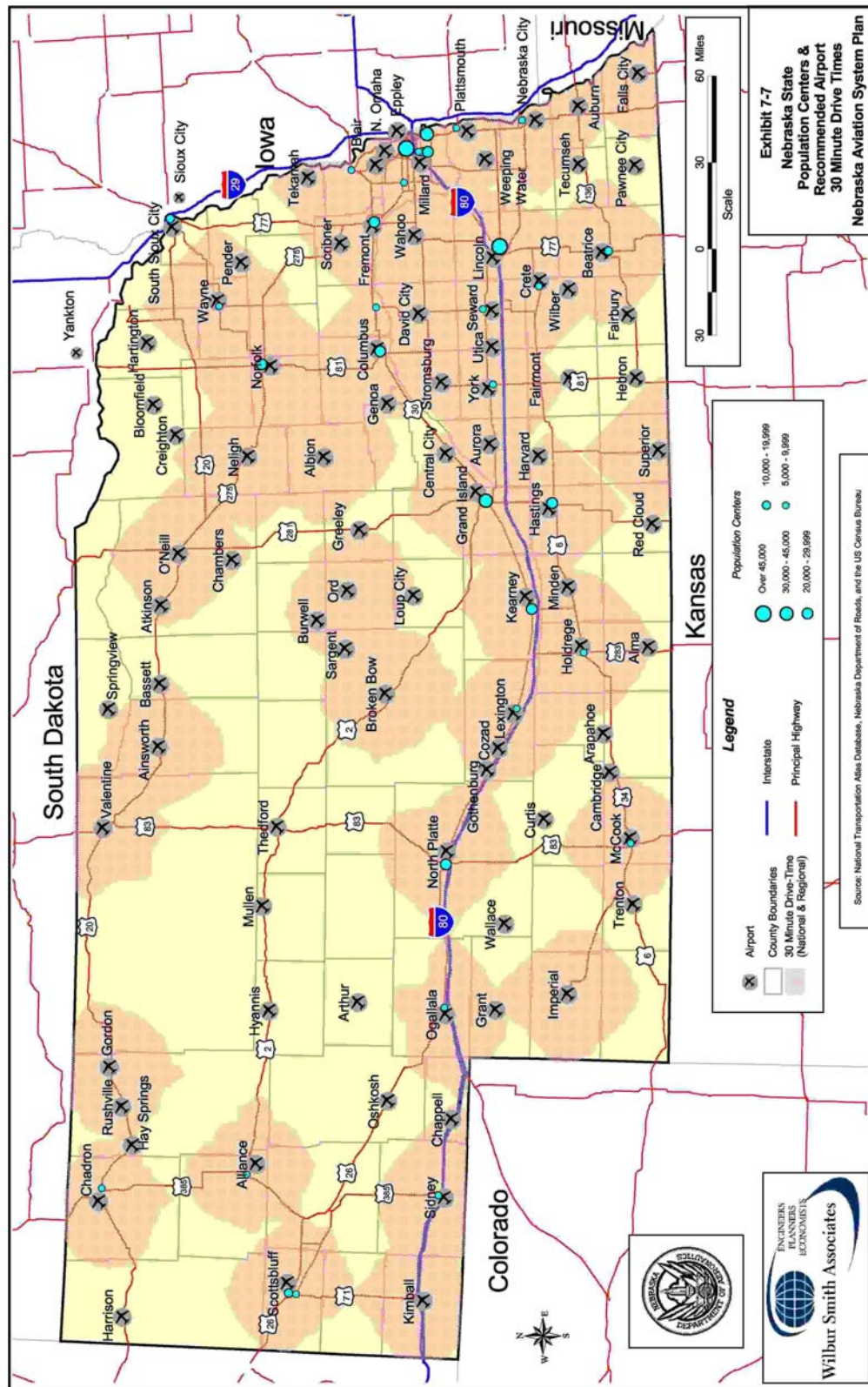


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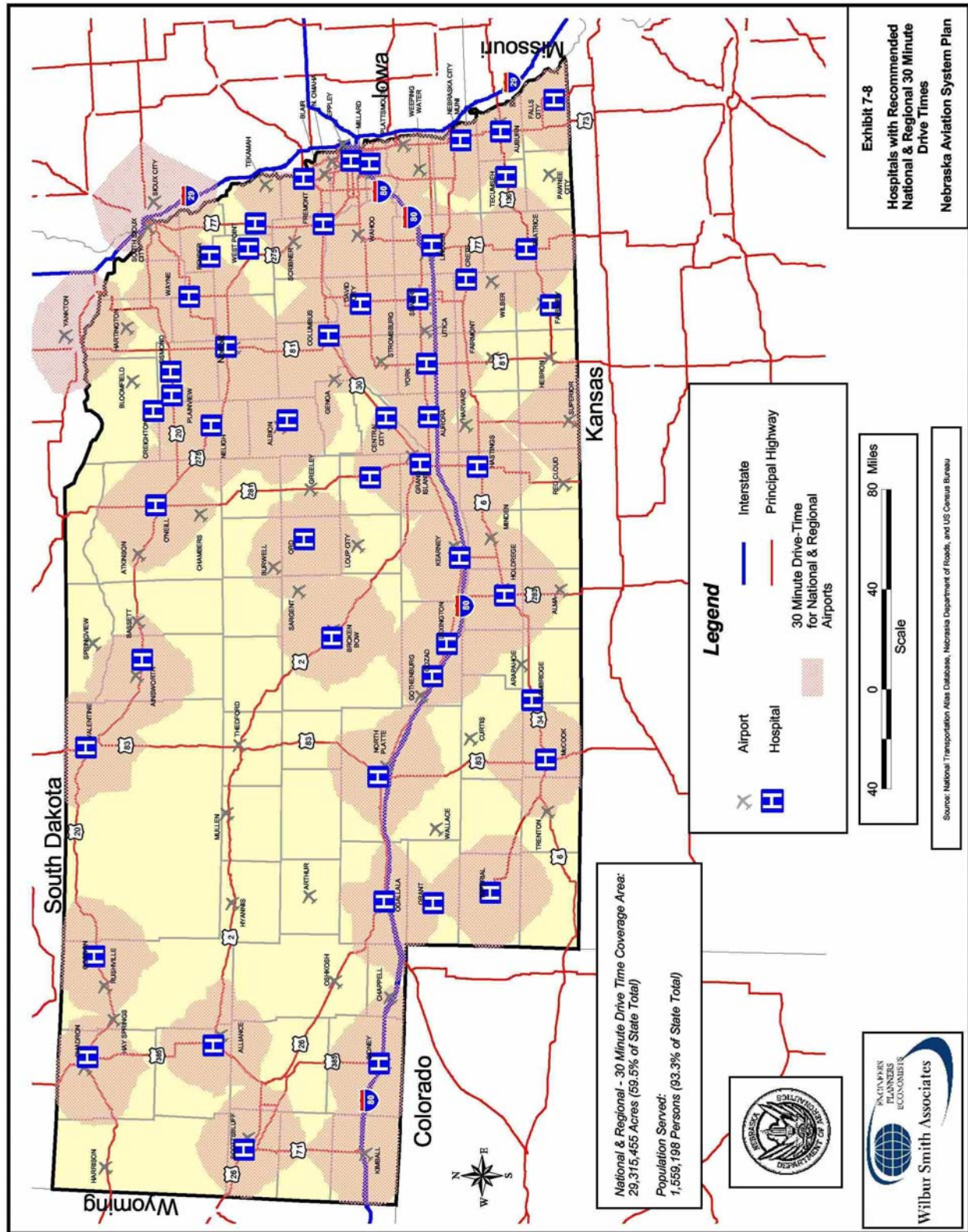


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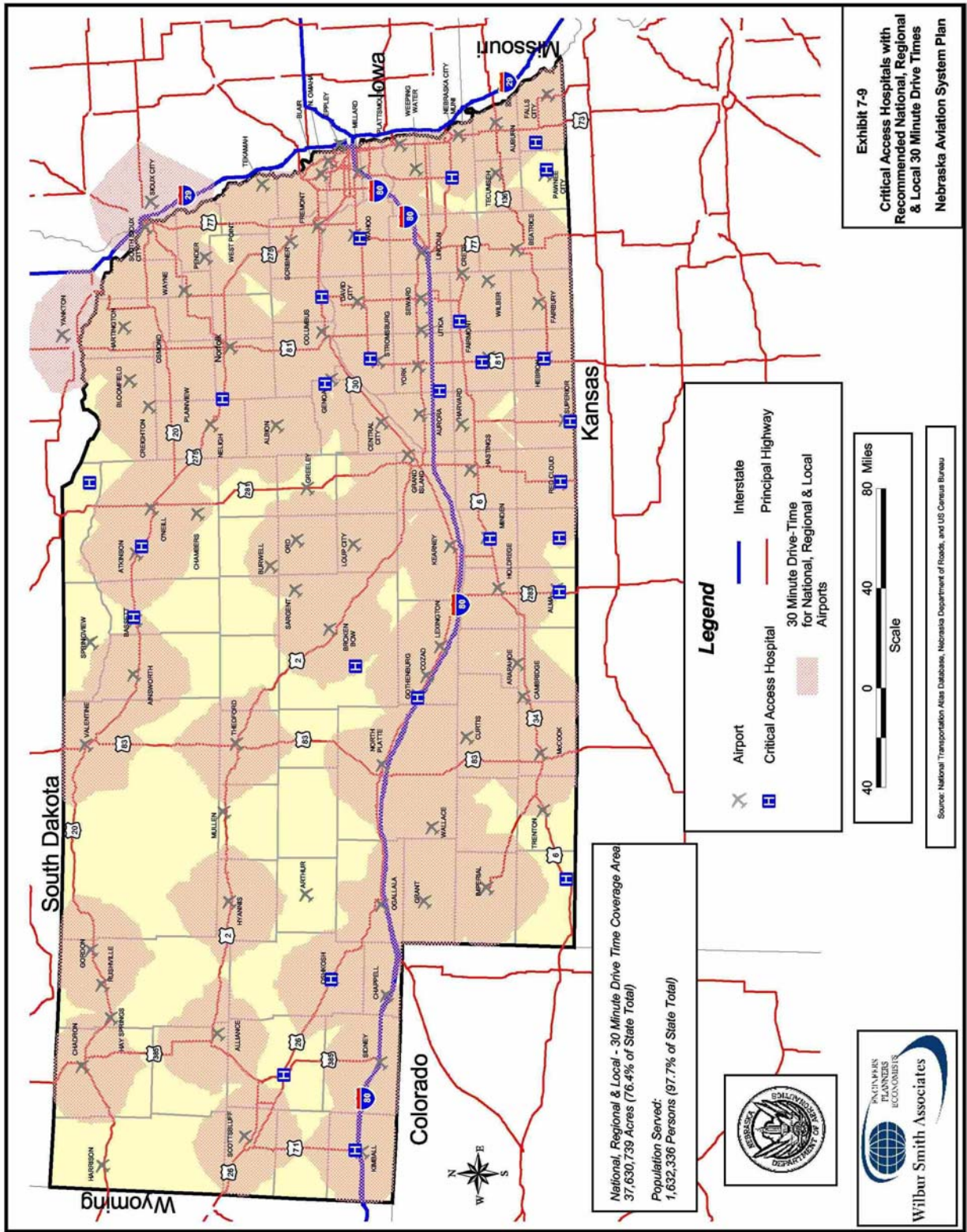
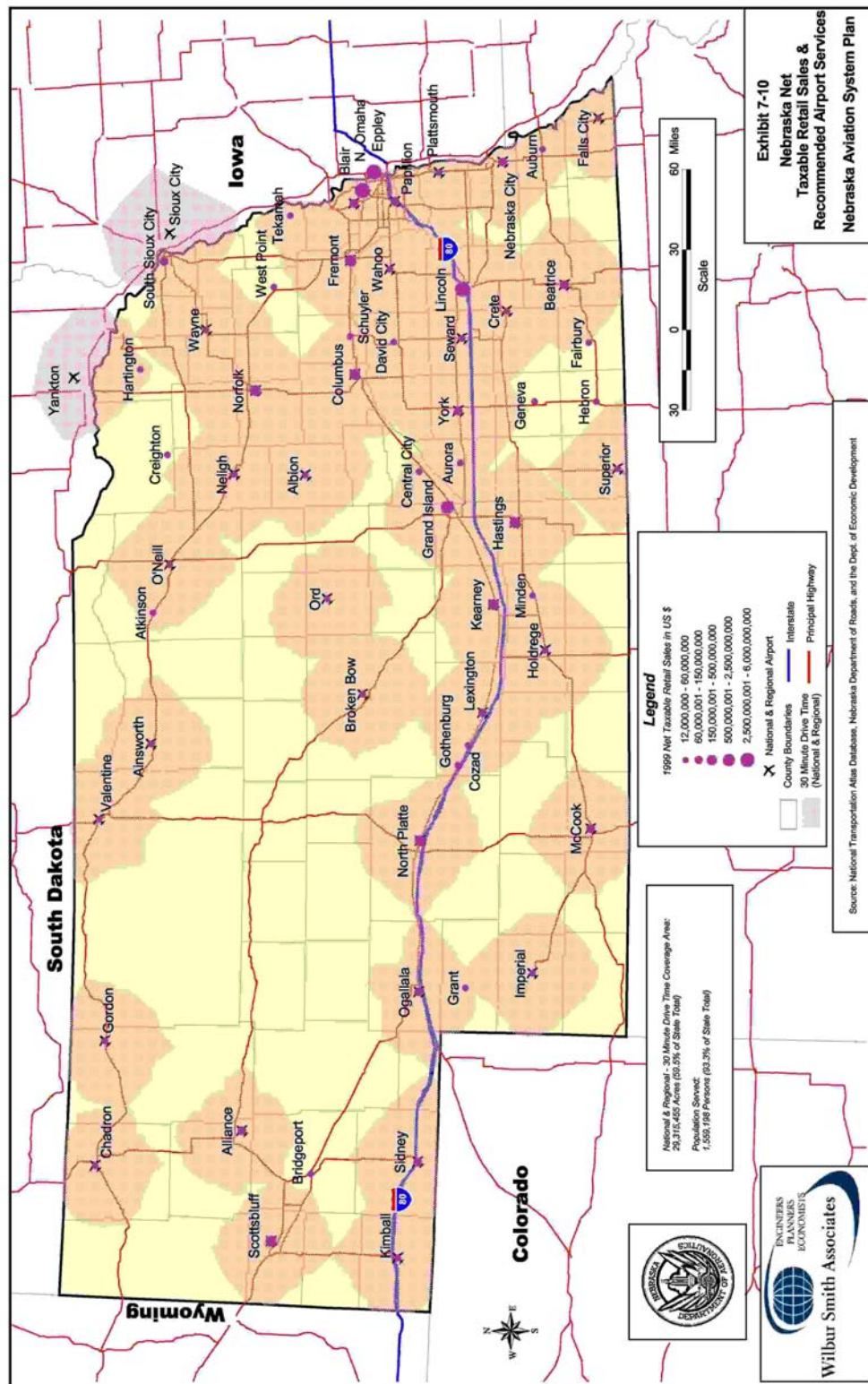


EXHIBIT 7-10



services. The following summarizes the ability of the recommended airport system to meet the standards, and also provides an indication of the types of facility improvements that are needed to improve the system's performance.

### **Airports Meeting Minimum Facility and Service Standards**

In previous analyses, the adequacy of the existing system to meet the identified standards was examined on the classification level, as well as specifically for the various facilities and services. The following facility and service standards were analyzed for the National, Regional, Local, and Limited airport classifications:

- ☐ Runway length
- ☐ Runway width
- ☐ Crosswind runway
- ☐ Taxiway
- ☐ Navigational aids (NAVAIDs)
- ☐ Lighting
- ☐ Weather
- ☐ Visual approach aids
- ☐ Services
- ☐ Fixed-base operators/maintenance
- ☐ Fuel
- ☐ Facilities
- ☐ Ground access

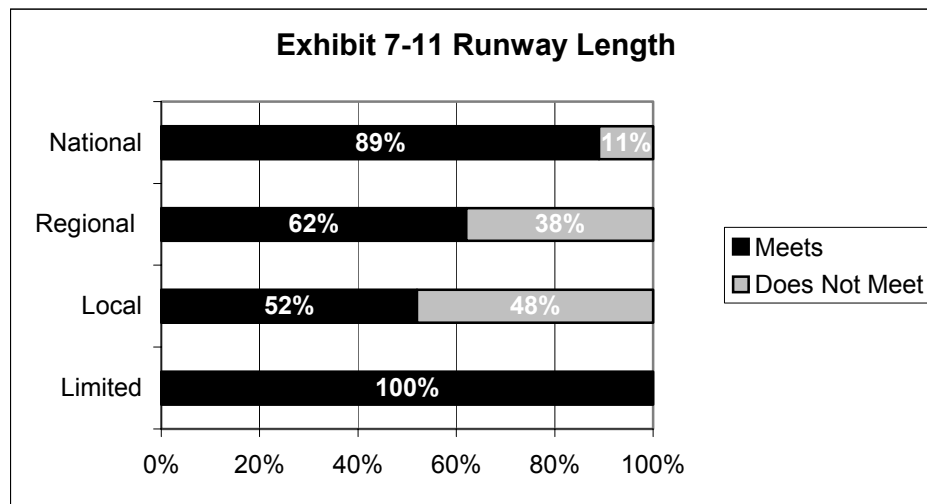
Each standard is addressed below.

### **Runway Length**

Runway length requirements were determined for each of the airports based on the recommended classification. The requirements for the various classifications included the following

- ☐ National – Length to meet 75% of large aircraft at 60% useful load
- ☐ Regional – Length to meet 100% of small aircraft with less than 10 passenger seats
- ☐ Local – Length to meet 95% of small aircraft (NPIAS); length to meet 75% of small aircraft (non-NPIAS)
- ☐ Limited – Length to meet 95% of small aircraft (NPIAS); maintain existing length (non-NPIAS)

Using the FAA's runway length program, each airport's existing runway length and the requirement for the airport's recommended classification were compared. The results are shown in **Exhibit 7-11**.



The analysis has shown that there are many runway extension projects needed for the airports to meet their recommended roles. While runway extensions are needed at 3 National, 10 Regional, and 13 Local airports, including full runway paving at Auburn, there are certain extensions that are uneconomical and impractical that will not be identified as part of the Capital Improvement Program. These include extensions for the following:

- ❑ Chadron – 98-foot extension (National)
- ❑ Crete – 100-foot extension (Regional)
- ❑ Imperial – 78-foot extension (Regional)
- ❑ Red Cloud – 100-foot extension (Local)

These airports were considered to have met the criteria due to the impracticality of making these minor improvements.

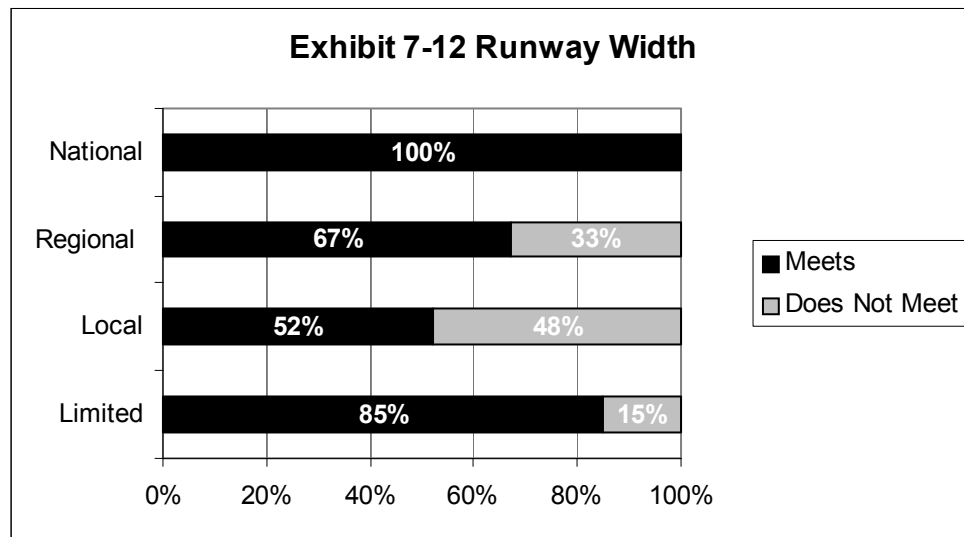
The recommended system's performance for runway length, even with the identified improvements, is significantly better than the performance identified in Chapter 5 based on the initial stratification of the airport system. Performance improvement includes the National airports (from 82% to 89%), Regional airports (44% to 62%), and Local airports (44% to 56%).

## Runway Width

Runway width design standards generally dictate that as the wingspan of the design aircraft at an airport increases, so should the width of the runway. The following summarizes the recommendations for runway width for the four airport categories:

- ❑ National – 100 feet
- ❑ Regional – 75 feet
- ❑ Local – 60 feet (NPIAS); 50 feet (non-NPIAS)
- ❑ Limited – 60 feet (paved) or 120 feet (turf) (NPIAS); 50 feet (paved) or 100 feet (turf) (non-NPIAS)

All of the airports recommended in the National category meet the minimum runway width requirements, as shown in **Exhibit 7-12**.



Additional runway width is needed at 7 Regional airports, 12 Local airports, and 4 Limited airports.

In terms of comparison, the recommended system's performance related to runway width is generally better than the performance identified in Chapter 5 based on the initial stratification of the airport system. Performance improvement includes the National airports (from 88% to 100%), Local airports (56% to 60%), and Limited airports (from 84% to 85%). The performance for the Regional airports remained the same at 67%.

### Crosswind Runway

As previously mentioned in Chapter 4, only the National Airports have minimum standards for crosswind runways. The minimum facility standards for National Airports indicate that a crosswind runway is required if it is needed to meet 95 percent wind coverage. The majority of the recommended National airports either needs an extension to the crosswind runway or requires crosswind runway paving. Runway extensions of the crosswind are needed at the following:

- ☐ Chadron
- ☐ Fremont
- ☐ Kearney
- ☐ McCook
- ☐ North Platte
- ☐ Omaha Eppley

Paved crosswind runways are needed at the following:

- ☐ Columbus
- ☐ Plattsmouth
- ☐ Sidney
- ☐ Valentine
- ☐ York

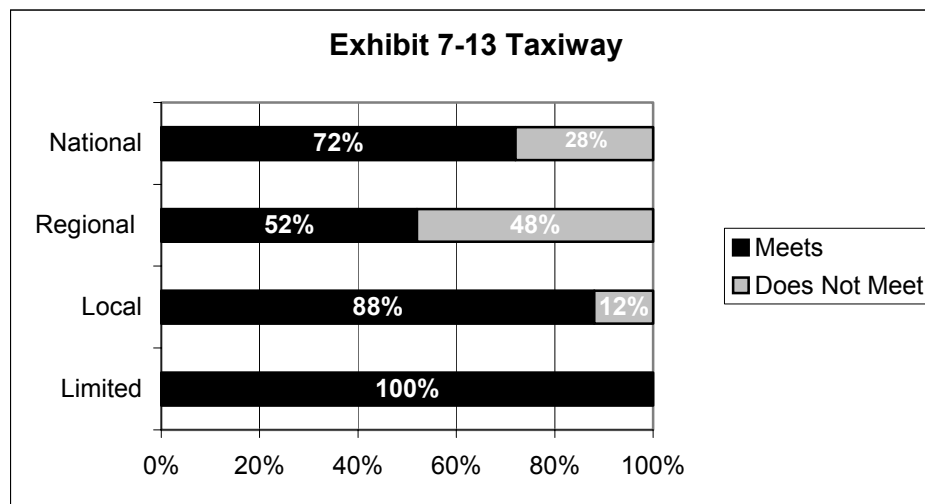
With additional airports in the National category (18 versus 17 from the previous analysis) and some new airports, there are 11 crosswind runway improvements identified versus only 8 in the previous analysis.

## Taxiway

The taxiway benchmark has minimum standards for National, Regional, and Local airports. The taxiway requirements are as follows:

- ❑ National – Full Parallel
- ❑ Regional – Partial Parallel
- ❑ Local – Turnarounds & Connectors
- ❑ Limited – Not Applicable

The ability of the airports to meet these standards is presented in **Exhibit 7-13**.



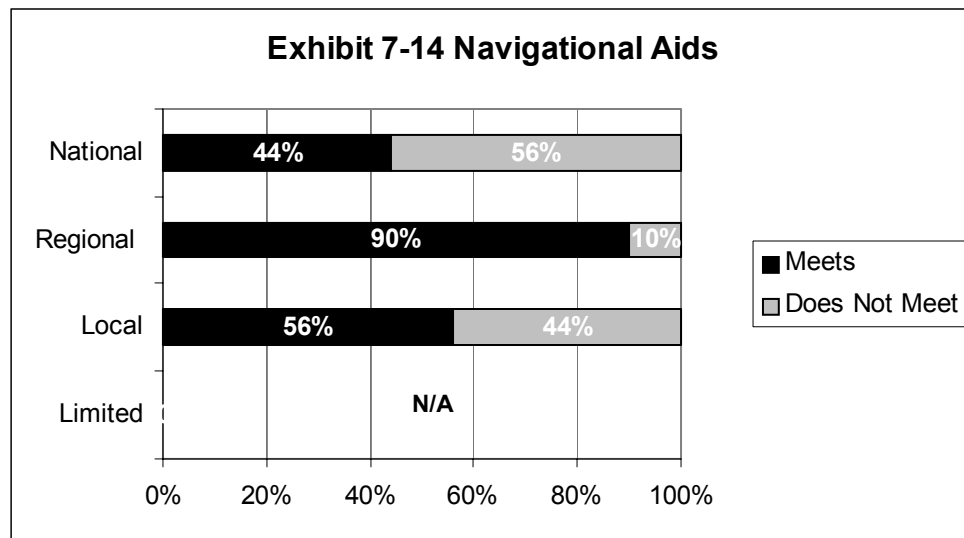
Taxiway improvements are needed at 5 National, 10 Regional, and 3 Local airports. In terms of comparison, the recommended system's performance related to taxiway standards is less than the performance identified in Chapter 5 based on the initial stratification of the airport system. Performance changes include National airports from 82% to 78%, Regional airports maintaining 52%, Local airports from 74% to 88%, and Limited airports maintaining 100%.

## Navigational Aids (NAVAIDs)

For this analysis, NAVAID recommendations were included in the minimum facility and service standards developed for the four classes of airports. In this analysis, NAVAIDs refer to the type of approach provided to the airports. The standards identified for the four classes of airports related to NAVAIDs were as follows:

- ❑ National – precision approach
- ❑ Regional – non-precision approach
- ❑ Local – non-precision approach
- ❑ Limited – not applicable

**Exhibit 7-14** presents the analysis of the recommended system’s ability to meet the NAVAID standards.



As shown, 10 National airports need a precision approach, 2 Regional airports need a non-precision approach, and 11 Local airports need a non-precision approach in order to meet the recommended role identified in the NASP.

In terms of comparison, the recommended system’s performance related to NAVAIDs is generally better than the performance identified in Chapter 5 based on the initial stratification of the airport system. Performance changes include the National airports (from 47% to 50%), Regional airports (from 85% to 90%), and Local airports (from 48% to 56%).

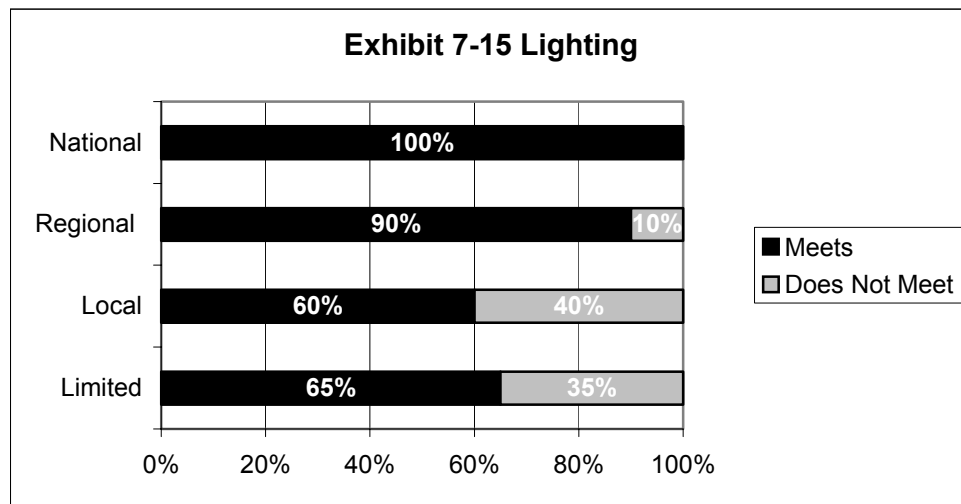
For Regional airports, the Nebraska Department of Aeronautics (NDA) has an ultimate objective to have non-precision approaches with 300-foot minimum descent altitude (MDA) and three-quarter mile visibility. This objective will require the use of global positioning system (GPS) approach capabilities that are not currently available. NDA will examine the fulfillment of this objective on an annual basis with the NDA Capital Improvement Plan.

## Lighting

For the NASP, lighting was identified in terms of runway lighting, as well as a beacon to identify the location of an airport at night. The following summarizes the recommended lighting by airport classification:

- ❑ National – MIRL, beacon
- ❑ Regional – MIRL, beacon
- ❑ Local – MIRL, beacon
- ❑ Limited – reflectors or LIRL, beacon

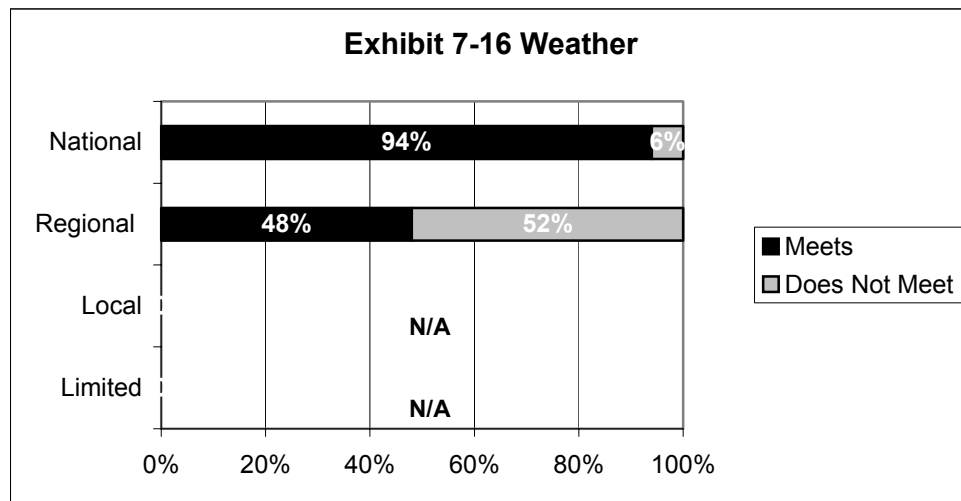
MIRL, medium intensity runway lighting, is recommended for the top three categories of airports. Typically, MIRL is needed to support a nighttime approach into an airport. A beacon also helps to guide pilots to an airport at night. **Exhibit 7-15** presents the recommended system’s compliance with the lighting standards.



As shown, all of the National airports meet the standard for lighting, but many of the other airports require additional or improved lighting. Two Regional, 10 Local, and 9 Limited airports were noted to need lighting improvements to meet standards for the recommended system.

## Weather

Weather-reporting facilities provide measurements and process surface weather observations for use by pilots wanting to access an airport. Weather-reporting facilities were only recommended for the National and Regional airport classifications. **Exhibit 7-16** presents the performance of the recommended system for the weather analysis.



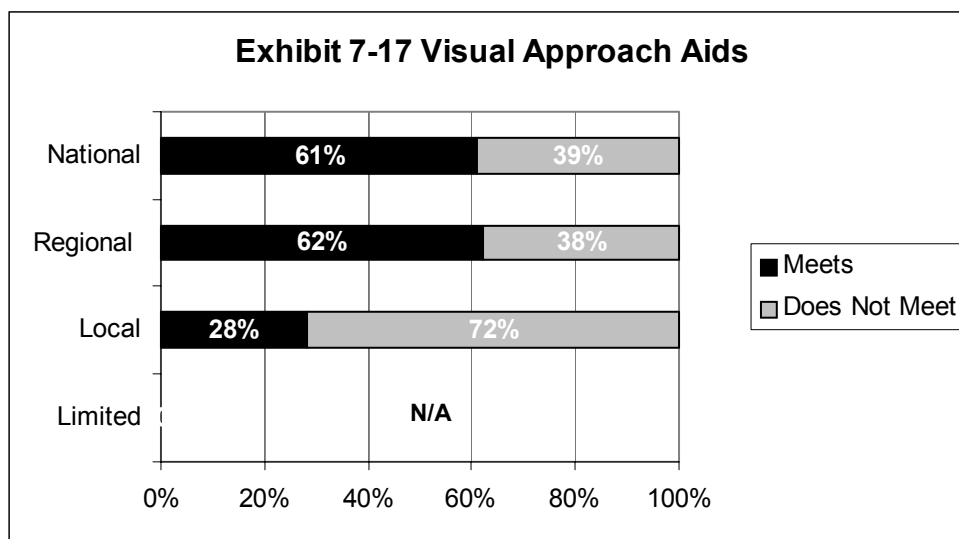
Weather-reporting facilities are needed at 1 National and 11 Regional airports for the recommended system to meet the identified standards. The performance of this measure was improved through development of the recommended system in terms of Regional airports, which went from 37% to 48% compliance with this objective.

## Visual Approach Aids

Visual approach aids include lighting systems and indicators that assist a pilot during an approach to an airport. The visual approach aid standards varied by airport classification as follows:

- ❑ National – MALSR, PAPIs/VASIs
- ❑ Regional – PAPIs/VASIs
- ❑ Local – PAPIs/VASIs
- ❑ Limited – not applicable

Definitions of these terms were provided in Chapter 5. It should be noted that VASIs are no longer manufactured and are being replaced by PAPIs at the end of their useful life. If an airport had VASIs, it was considered to meet the PAPI standard. **Exhibit 7-17** presents the analysis of the recommended system's ability to meet the standards for visual approach aids. It is important to note that visual aids such as PAPIs should be provided on the runway end that has the instrument approach as the aids assist during the approach to the runway.



As shown, 7 National, 8 Regional, and 18 Local airports were noted to need visual approach aid improvements to meet the standards for the recommended system.

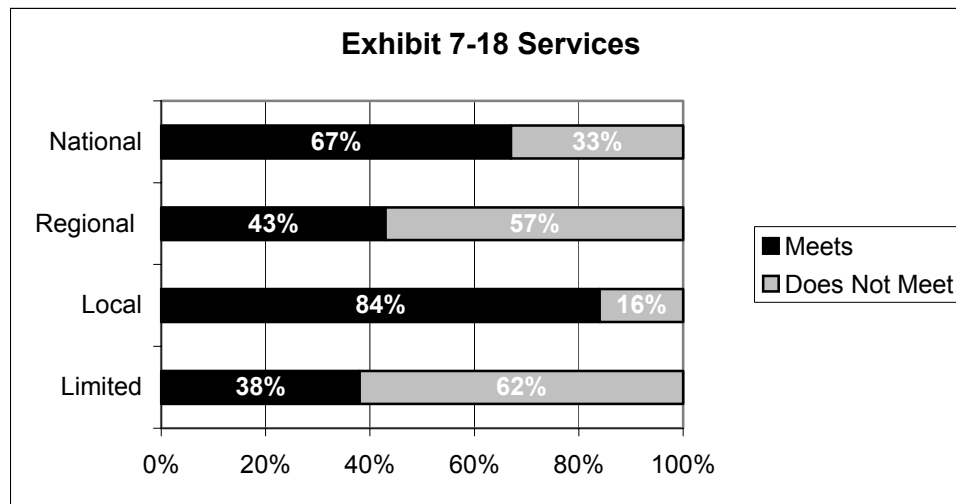
In terms of comparison, the recommended system's performance related to visual approach aids is generally better than the performance identified in Chapter 5 based on the initial stratification of the airport system. Performance changes include the National airports (from 65% to 61%), Regional airports (from 59% to 62%), and Local airports (from 19% to 40%).

## Services

While an airport's facilities such as runways and taxiways are important to its use, the provision of services also contributes to an airport's activity levels. Services were identified as phone, restroom, fixed-base operator (FBO), maintenance, fuel, ground transportation, and communications. Service standards by airport classification can be summarized as follows:

- ❑ National – phone, restrooms, FBO, maintenance, jet fuel, ground transportation, RCO/GCO/ATCT
- ❑ Regional – phone, restrooms, FBO, maintenance, jet fuel, ground transportation
- ❑ Local – phone, restrooms, fuel
- ❑ Limited – phone, restrooms

The availability of fuel and the presence of an FBO were examined separately in subsequent sections. **Exhibit 7-18** summarizes the results by airport classification for the other services examined in this analysis.



For this measurement, the performance of the system is reduced overall, with many airports not meeting the standards for their recommended classification. National airports went from 76% to 67% for the recommended system, and Regional airports went from 85% to 43%. Local and Limited airports had improved performance with Local increasing from 70% to 84% and Limited rising from 32% to 38%. This is attributed to the shifting in many airport roles to lower categories than they were initially assigned.

### Fixed-Base Operators/Maintenance

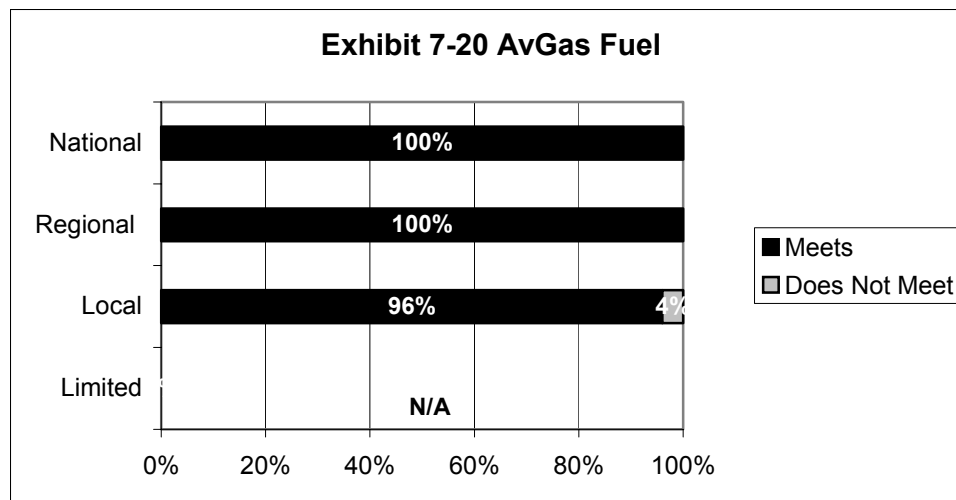
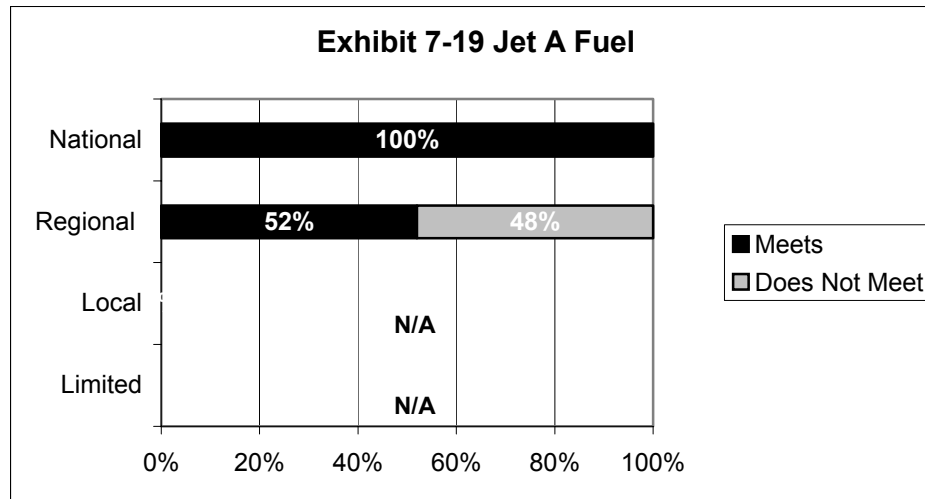
For National and Regional airports, the minimum facility and service objectives identified that a fixed base operator should provide service at the airports, including maintenance. All of the recommended National airports meet this standard. FBOs with maintenance service are needed at the following recommended Regional airports:

- ❑ Ainsworth
- ❑ Albion
- ❑ Blair
- ❑ Imperial
- ❑ Ord
- ❑ Superior

While only 2 Regional airports were identified in Chapter 5 as needing an FBO/maintenance, additional needs were identified through the changes in recommended roles in order for the recommended Regional airports to meet the minimum standards.

## Fuel

The minimum facility and service standards identified that National and Regional airports should provide jet fuel and AvGas, and that Local airports should provide AvGas. Exhibits 7-19 and 7-20 present the results of the recommended system's compliance with these standards.



As shown, 10 of the 21 Regional airports need jet fuel and 1 Local airport needs AvGas.

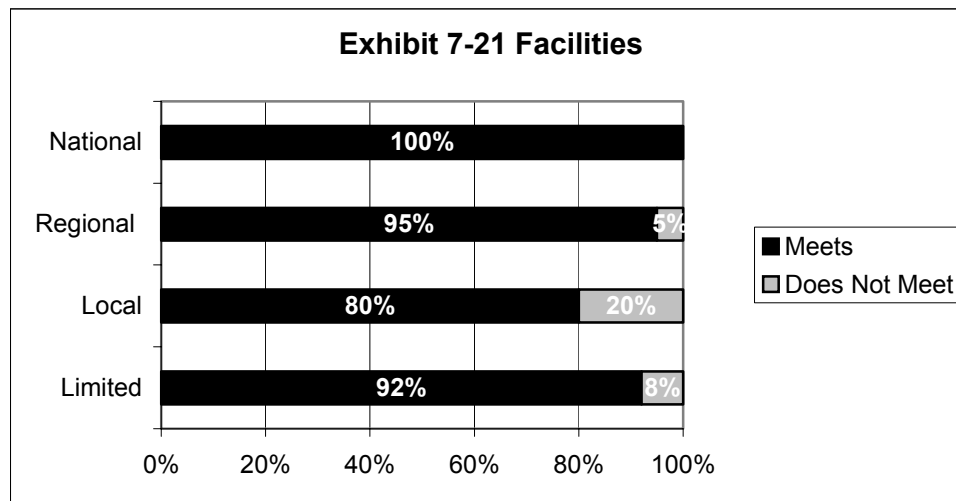
Compared to the analysis of fuel provision in Chapter 5, the performance of the airports related to jet fuel improved for the National (from 94% to 100%) and the Regional airports (from 41% to 48%). In terms of AvGas, performance remained the same in two categories, National and Regional at 100%, and increased at the Local airports from 81% to 96%.

## Facilities

The minimum facility and service standards identified specific facilities such as terminal, aircraft apron, hangars, auto parking, pilots lounge, etc. for the four categories of airports. The standards by airport classification are as follows:

- ❑ National – terminal, aircraft apron, hangars, auto parking
- ❑ Regional – terminal, aircraft apron, hangars, auto parking
- ❑ Local – pilots lounge, aircraft apron, hangars, auto parking
- ❑ Limited – aircraft apron, hangars, auto parking

The provision of these facilities based on the recommended airport roles was examined. **Exhibit 7-21** summarizes the results of the facilities analysis by airport functional level.

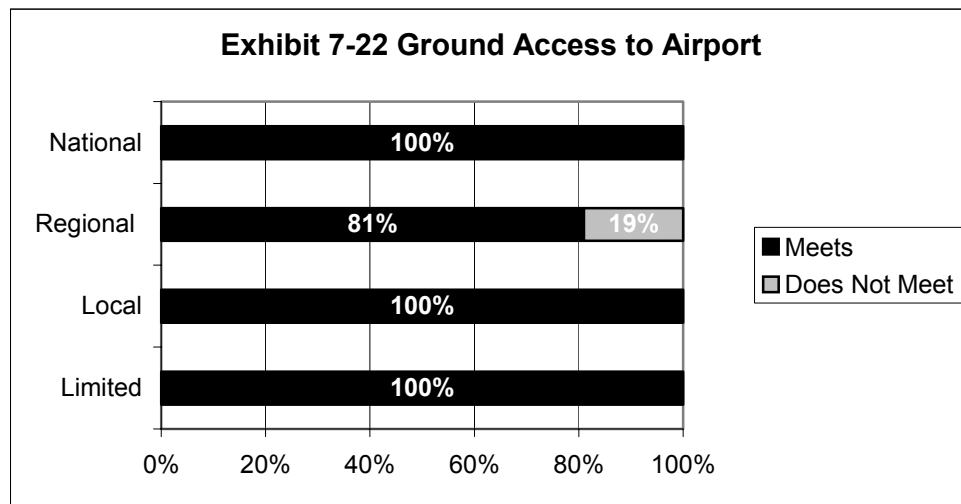


As shown, all of the recommended National airports have the existing facilities in place to meet the standards. One of the 21 Regional airports, 5 of the 25 Local airports, and 2 of the 25 Limited airports need additional facilities in order to meet the standards set in the NASP.

This performance is similar to the analysis conducted in Chapter 5, which noted National airports to have met 100%, Regional to have met 93% (compared to 95% for the recommended system), Local to have met 70% (compared to 80% for the recommended system), and Limited to have met 95% (compared to 92% for the recommended system). Specific projects related to improved landside facilities will be identified in a later section.

## Ground Access

The condition of the ground access from the Central Business District (CBD) to the airport was also analyzed as part of the minimum standards. The minimum standards indicated that a paved road and signs directing users to the airport were needed at National and Regional airports, and that signage should be provided to Local and Limited airports. The results for the recommended system are depicted in **Exhibit 7-22**. While the availability of signage was not reviewed as part of the analysis, it is recommended that signage to and from the CBD is provided to all airports. In addition to signage, paved parking is also important to the airport, especially those identified as National and Regional. It is recommended that the airports conduct a thorough review of access, signage, and paved parking as they consider facility improvements.



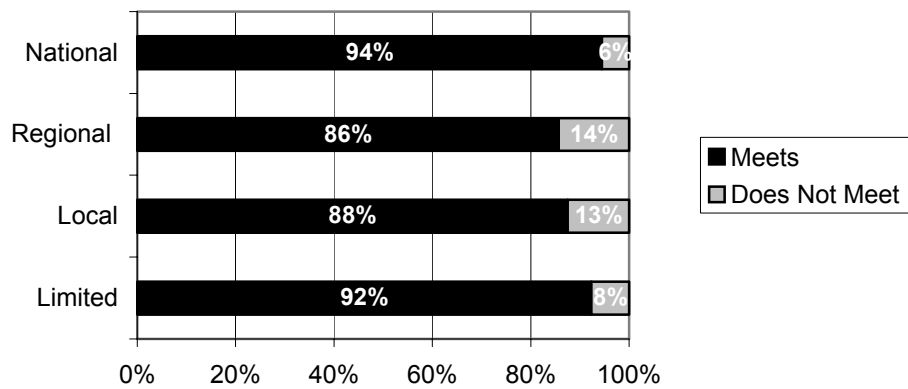
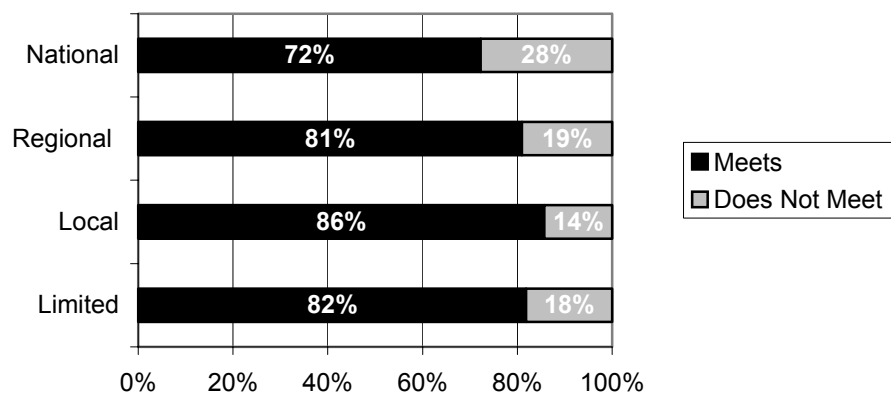
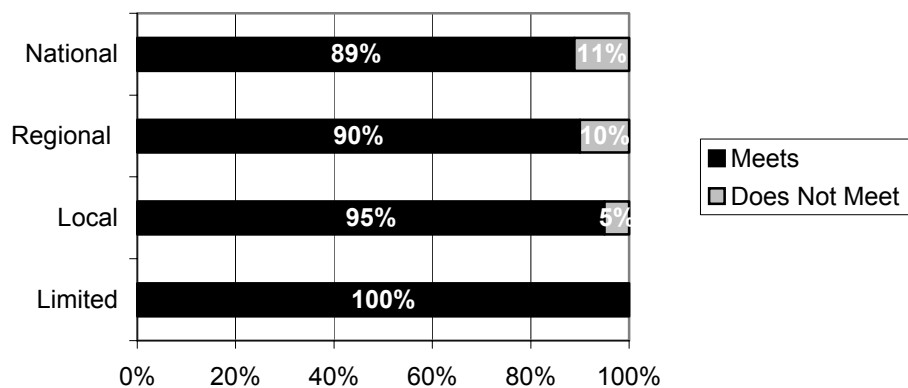
Only 4 recommended Regional airports were noted to need a fully paved access road to the airport. In the analysis in Chapter 5, six airports were identified as being deficient. However, with shifts in the airport categories, only 2 require this improvement for the recommended system to meet standards.

### Airports Meeting FAA Operational Capacity Guidelines

An adequate airport system should provide ample capacity to accommodate current and future activity levels. In 2000, 99 percent of all system airports were operating below 60 percent of their available operational capacity. The one airport in the National airport category whose operations exceeded 60 percent of its capacity in 2000 was Eppley Airfield. This deficiency is currently being addressed at the airport through the construction of a parallel runway. Construction of this runway, which is underway in late 2001, will enable the system to meet this objective 100 percent.

### Airports Meeting PCI Goals

Pavement condition index (PCI) is a standard measurement used by the Nebraska Department of Aeronautics to describe their condition. Generally speaking, an average PCI value greater than 70 represents pavement in excellent or good condition that will benefit from preventive maintenance actions such as crack and joint sealing and surface treatments. **Exhibits 7-23** through **7-25** present the PCI ratings for the primary runway, primary taxiway, and apron for the recommended system of airports.

**Exhibit 7-23 Primary Runway PCI****Exhibit 7-24 Primary Taxiway PCI****Exhibit 7-25 Apron PCI**

The performance of the pavements at the Nebraska airports is very good. While performance changed based on the recommended roles, the same pavement improvements and maintenance projects are needed in order for NDA to maintain its pavements according to their high standards.

## **SOCIAL/CULTURAL RECOMMENDATIONS**

A goal of the Nebraska Aviation System is to serve the State's tourism and cultural centers, as well as to serve more isolated areas. The adequacy analysis noted that sufficient data does not exist to evaluate the aviation system's ability to serve tourism and cultural centers throughout the State. Most data indicated that travelers were arriving at many of the State's attractions via car and that aviation services at the existing airports appear to be meeting the needs of those who are currently using aviation.

The recommended system does not provide any specific changes to improve upon the social/cultural objectives of the plan.

## **RELIEVER AIRPORT ANALYSIS**

Following the deregulation of the nation's scheduled commercial carriers in 1978, many commercial service airports began to experience operational congestion. It was apparent that augmenting the operational capacity of the nation's commercial airport system through the development of new air carrier airports or new runways would be a slow, and in some cases, an impossible process. Therefore, as an alternative to providing additional airside facilities to enhance the capacity of the commercial airport system, both old and new methods of demand management were evaluated and implemented.

Use of the reliever airport concept is one established method of demand management. Guidelines for establishing reliever airports were first developed by the FAA in the early 1980s. Reliever airports are intended to provide alternatives for general aviation aircraft that might otherwise be based at or operate at a congested commercial service airport. Reliever airports are intended to serve both locally generated operations and transient activity.

Current reliever airport criteria are delineated in FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), dated December 4, 2000. This revised version is an update to the 1985 FAA Order. The most significant change between the 1985 and 2000 versions of this FAA Order was revised reliever airport criteria. The following criteria must now be met in order for an airport to be designated by the FAA as a reliever:

- ❑ The reliever airport must provide substantial capacity, as evidenced by:
  - Have at least 100 based aircraft or 25,000 annual itinerant operations
  - Be forecast to have 100 based aircraft or 25,000 annual itinerant operations
- ❑ The commercial/relieved airport should:
  - Have commercial service and serve a metropolitan area with a population of 250,000 persons or have at least 250,000 enplanements
  - Operate at 60 percent of capacity

Eppley Airfield in Omaha has historically met the criteria for a relieved airport. The metropolitan area of Omaha is estimated to have over 700,000 persons, far surpassing the 250,000 criteria. In 2000, the airport

experienced nearly 2 million enplanements. Operational capacity has been an issue since the early 1990s, when demand exceeded capacity by more than 60 percent. In 2001, Eppley completed Phase I of a runway project that will provide a 7,000-foot parallel runway, increasing the capacity of the airport. While this project is well on its way towards completion, development of a reliever system is still important to Omaha as Eppley meets the other criteria to qualify as a relieved airport.

As noted by the FAA in its Order on the NPIAS, “there is no simple mathematical equation that will indicate the maximum number of relievers that will be needed. Each situation must be examined carefully and analytical judgment applied to determine the number of required relievers.”

Prior to the updated criteria published in 2000, Eppley Airfield had four designated relievers:

- ❑ Blair
- ❑ Millard
- ❑ Plattsmouth
- ❑ Council Bluffs, Iowa

These four airports were developed with the thought that facilities should be provided at these airports to attract general aviation aircraft who might otherwise choose to operate at Eppley, further impacting that airport’s ability to accommodate commercial air traffic. Since the revised criteria were adopted, the only airport that currently qualifies as a designated FAA reliever is Millard. Council Bluffs is forecast to reach the operational level required to qualify for designation as a reliever airport in the future.

In addition to these four airports, North Omaha Airport is also located in proximity to Eppley Airfield. North Omaha is actually located the closest of any of the airports, but there are several issues that do not support a reliever designation for this airport. North Omaha is privately owned. While some privately owned airports are included as relievers in the NPIAS, it is the intent of the FAA to designate only publicly owned airports. The FAA has noted in its Order that currently designated privately owned airports that do not meet the new criteria but have received federal Airport Improvement Program (AIP) funds will retain the designation until their grant obligations expire. North Omaha is also primarily a recreational airport, supporting recreational activity in the region. The airport is also constrained, with an existing runway length of 2,480 feet, which includes a displaced threshold of 600 feet, and limited expansion capabilities.

While no formula exists for determining the number of reliever airports needed to supplement a commercial/relieved airport, the airports in the region can be examined to evaluate if the regional system, in this case the Omaha region, can adequately serve projected demand. The five airports in the region, including the four previously designated relievers and North Omaha, were examined for their ability to accommodate general aviation activity and serve as relievers in the Omaha region.

General aviation activity at Eppley Airfield is estimated to comprise 50 percent of the airport’s annual operations. The airport does provide T-hangars for storage of general aviation aircraft, along with some corporate facilities. Of the estimated general aviation operations, approximately 40 percent is local activity and 60 percent itinerant. Reduction in the general aviation activity at Eppley provides additional operating capacity for growth in commercial operations at the airport. Long term, it is typically more cost effective to provide facilities at other reliever airports that attract general aviation activity away from the commercial airport than it is to provide additional operating capacity at the commercial/relieved airport.

Generally speaking, demand for reliever system airports is generated by both local and external sources. Demand for storage capacity, as well as airfield capacity, is generated by locally owned and operated aircraft, while transient aircraft coming into the metropolitan area primarily generate demand for airfield facilities (runway, taxiway, apron). The reliever airport or airports are anticipated to accommodate general aviation demand, both existing and projected, that is using Eppley Airfield. The reliever airports must have the capacity and facilities to accommodate growth generated in the local market, as well as attract transient operators.

Typically, reliever airports are developed such that they provide attractive and relatively equal facilities to the airport they are relieving to adequately fulfill their reliever roles. While commercial air service is not provided, runway length and strength, instrumentation, and services (jet fuel, rental car, and fixed-base operator) needed to accommodate business traffic, including some business jets, should be available in order to attract aircraft operators away from the commercial airport.

The existing airports in the region were examined to determine their ability to fulfill a reliever role in the Omaha system. Runway length and strength, instrumentation, and services were evaluated for each of the five airports in the region. Other available data on planned improvements, existing conditions, and the ability of the airport to serve in a reliever role were also collected. A summary of each airport is provided below.

### **Blair**

Blair Municipal Airport is located approximately 20 to 25 miles north of Eppley Airfield, with access to the airport provided by Nebraska Highway 133. The existing primary runway is 3,450 feet long. Runway 13 has a displaced threshold of 350 feet. The runway is estimated to have a strength of 25,000 pounds single wheel. The airport is currently without an instrument approach and a fixed-base operator (FBO) with maintenance capabilities.

The airport's recommended role in the Nebraska Aviation System is Regional. In order for the airport to meet this recommended role, additional facilities must be provided including ground transportation, an FBO/maintenance operator, jet fuel, a runway extension and width increase, automated weather facility, PAPIs, medium intensity runway lighting, and a terminal building.

In 1999, Blair was estimated to have 41 based aircraft and approximately 14,100 annual operations. The airport has sufficient operational capacity to accommodate a high increase in operations and there appears to be expansion potential for additional aircraft storage development. The airport's existing runway is constrained from future development due to the existing road network. There are roads on each side of the airport. These roads can be relocated or closed to accommodate an ultimate 5,500-foot long runway, as shown on the airport's approved airport layout plan (ALP). The airport is currently taking steps to purchase the additional land required for a new 4,000-foot long runway, which they plan to complete within the next five years.

### **Millard**

Millard is currently the only FAA-designated reliever airport in the region. Millard Airport is located approximately 20 miles southwest of Eppley Airfield, with access to the area provided by Interstate 80. The existing primary runway is 3,800 feet long, but has a displaced threshold of 212 feet. The runway has strength of 12,500 pounds single and dual wheel. The airport has several instrument approaches

including a VOR/DME RNAV to Runway 12, NDB to Runway 12, and a GPS to Runway 12. Millard also has two FBOs that provide significant services, including jet fuel and rental cars.

The airport's recommended role in the Nebraska Aviation System is Regional. In order for the airport to meet this recommended role, a longer runway is needed. Recent planning studies conducted for the airport have noted that Millard is limited for expansion due to siting constraints that will only allow the airport to meet the FAA's design standards for small aircraft exclusively. At this time, it doesn't appear that Millard can be expanded to meet the needs of larger, business aircraft.

In 1999, Millard was estimated to have 173 based aircraft and approximately 71,575 annual operations. From a capacity standpoint, the airport has sufficient operational capacity to accommodate an increase in operations, but there appears to be limited expansion potential for additional aircraft storage development. The airport has historically had a waiting list for additional hangars.

### **North Omaha**

North Omaha Airport is a privately owned facility that supports recreational aircraft in the Omaha area. While actually the closest of the regional general aviation airports at approximately 10 miles, North Omaha has a runway length of only 2,480 feet, no instrument approach, and the least amount of facilities to serve business aircraft of any Omaha-area system airport.

The airport's recommended role in the Nebraska Aviation System is Local. In order for the airport to meet this recommended role, a longer and wider runway, medium intensity lighting, a beacon, and PAPIs are needed. Federal funding is not provided to North Omaha, leaving all funding to either State, local or private resources.

In 1999, North Omaha was estimated to have 58 based aircraft and approximately 14,250 annual operations. The airport has sufficient operational capacity to accommodate an increase in operations, but only for small aircraft that can operate on the relatively short runway.

### **Plattsmouth**

Plattsmouth Municipal, located approximately 28 miles south of Eppley Airfield, can be accessed via the Kennedy Expressway (U.S. 75). The existing primary runway is 4,100 feet long. The runway has strength of 30,000 pounds single wheel, 45,000 pounds dual wheel, and 90,000 pounds dual wheel tandem. The airport has several instrument approaches including an NDB to Runway 34, GPS to Runway 16, and a GPS to Runway 34. Plattsmouth also has an FBO that provides limited services.

The airport's recommended role in the Nebraska Aviation System is National. In order for the airport to meet this recommended role, numerous improvements are needed including development of a precision instrument approach, MALSR, PAPIs, RCO, weather information, runway and taxiway extension, a paved crosswind runway, and paved ground access to the facilities. Recent planning studies conducted for the airport have noted that Plattsmouth is planning for future development to accommodate larger aircraft.

In 1999, Plattsmouth was estimated to have 40 based aircraft and approximately 20,400 annual operations. The airport has sufficient operational capacity to accommodate an increase in operations, and there appears to be expansion potential for additional aircraft storage development.

## **Council Bluffs, Iowa**

Council Bluffs Airport is located approximately 16 miles east of Eppley Airfield, with access to the area provided by Interstate 80. The existing primary runway is 4,100 feet long. The runway is estimated to have an estimated strength of 28,000 pounds single wheel and 48,000 pounds dual wheel. The airport has several instrument approaches including a GPS to Runway 31, and a VOR and GPS circling approach to the airport. Council Bluffs also has an FBO that provides limited services. An AWOS-3 is also provided at the airport.

The airport's 1998 Master Plan recommended an upgraded role as a future reliever for Eppley Airfield and for the airport to accommodate larger aircraft. The proposed role is similar to the National category in the Nebraska Aviation System. In order for the airport to meet this recommended role, numerous improvements have been identified including development of a precision instrument approach, MALSR, PAPIs, RCO, and runway and taxiway extensions. Roadway improvements are also planned to provide access to the airport from the regional highway network.

In 1999, Council Bluffs was estimated to have 56 based aircraft and approximately 18,200 annual operations. The airport has sufficient operational capacity to accommodate an increase in operations, and there appears to be expansion potential for additional aircraft storage development. The airport built 18 new T-hangars in 1999.

## **Summary of Reliever Analysis**

Of the five general aviation airports in the Omaha area, Millard is the most active facility, but has limitations that prevent it from fulfilling the reliever airport needs of the region. To facilitate development of a reliever airport system, Plattsmouth and Council Bluffs appear to have the most growth potential to develop as reliever-type facilities to supplement operational demand for large aircraft in the Omaha region. While the FAA does not clearly define how many reliever airports are needed for a region, provision of more than one airport with the capability of supporting business aviation demand will, in the long term, provide needed capacity that will lengthen the viability of commercial activity at Eppley Airfield. With Millard serving the smaller aircraft needs, Plattsmouth and Council Bluffs could serve the business needs in the region over the long term. Designation of these airports as relievers will be made only when the airports can meet the new criteria set forth by the FAA.

## **AIRPORTS IN THE NPIAS**

The National Plan of Integrated Airport Systems (NPIAS) is a national report prepared by the FAA that identifies airports that are important to the national air transportation system. The latest report, prepared in March 1999 for the period 1998-2002 identifies 3,344 existing airports and \$35.1 billion in infrastructure development needs that are eligible for Federal funding during that period. Inclusion in the NPIAS carries with it eligibility to apply for Federal funding to assist in airport development. Airports that are included in the NPIAS should be developed to meet FAA design standards as outlined in various advisory circulars that document the design requirements based on the type of aircraft that regularly operate at the airport regardless of the funding source for airport improvements (to comply with grant assurances for such airports).

Current FAA requirements for entry or inclusion in the NPIAS were identified in FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), dated December 4, 2000.

As identified in the FAA document, an existing airport that is currently included in an accepted SASP is eligible for inclusion in the NPIAS if the following conditions are satisfied:

- ❑ The airport serves a community located 30 minutes or more average ground travel time from the nearest existing or proposed NPIAS airport
- ❑ The airport has at least 10 based aircraft

Airports previously included in the NPIAS were noted to remain in the NPIAS if they are obligated resulting from acceptance of an FAA grant. The exceptions to this rule are non-inclusion in a state airport system plan and/or no longer a continuing system role for the airport.

For purposes of the Nebraska Aviation System Plan, the airports in the National and Regional categories should clearly be recognized in the NPIAS. In addition, most airports in the Local category should also be recognized in the NPIAS. The following airports in the Local category should be reevaluated for possible inclusion in the NPIAS:

- ❑ North Omaha
- ❑ Wallace

While North Omaha has 50 based aircraft and an estimated 14,250 annual operations, the airport is privately owned and is within a 30-minute ground travel time of an existing NPIAS airport. As such, North Omaha is not eligible to be included in the NPIAS unless it is designated as a reliever airport (see previous discussion on page 21 on reliever airports). If one of these factors changes, it may be prudent to reevaluate North Omaha's NPIAS status.

Wallace currently only has eight based aircraft. For inclusion in the NPIAS, the airport should have 10 based aircraft or be forecast to have 10 in the near future. Additional analysis on forecast activity at Wallace will be necessary before the airport's NPIAS status can be reevaluated.

It is recommended that the NPIAS status of the following Limited category airport locations be reevaluated:

- ❑ Alma Municipal
- ❑ Bassett
- ❑ Benkelman – New
- ❑ Burwell
- ❑ Chappell
- ❑ Greeley
- ❑ Harvard
- ❑ Pawnee City
- ❑ Pender
- ❑ Rushville
- ❑ Sargent
- ❑ Tecumseh

## CAPITAL IMPROVEMENT COSTS

Based on the analysis of the recommended airport system's performance, specific projects have been identified for airports in the Nebraska system. These projects relate to improving the airport system's performance, especially as it relates to facility and service standards set as part of this study. The facility improvements identified are somewhat "theoretical" in nature, as they have not been analyzed from an engineering standpoint to determine their total feasibility. The total improvements have been phased based on priority and likely funding ability to meet the development needs.

Development costs identified in the NASP, as well as recent master plan and rehabilitation projects, are outlined by airport in Appendix A. Appendix A provides a capital improvement plan for each airport with phasing and potential funding sources identified.

**Table 7-2** summarizes the capital improvement needs of the Nebraska Aviation System. When all projects are considered including projects previously identified as part of the Capital Improvement Plan FY 2002-2021 prepared by Nebraska Department of Aeronautics, and projects identified as part of the NASP, statewide needs are approximately \$538.4 million. Of this total statewide amount, approximately \$283.0 has been determined to be eligible for federal funding, \$20.0 million for state funding, and \$235.3 million in local/private funding. As shown in Table 7-2, through the NASP, \$56.2 million in new projects were identified to meet objectives for the study.

**Table 7-2  
Airport Funding Needs**

<b>All Projects</b>				
	<b>Federal</b>	<b>State</b>	<b>Local/Private</b>	<b>TOTAL</b>
National	\$221,663,262	\$5,996,809	\$179,237,048	\$406,897,119
Regional	\$41,957,374	\$4,432,740	\$28,435,349	\$74,825,463
Local	\$15,583,640	\$6,442,910	\$15,285,090	\$37,311,640
Limited	\$3,781,450	\$2,997,151	\$12,354,409	\$19,133,010
<b>STATEWIDE</b>	<b>\$282,985,726</b>	<b>\$19,869,610</b>	<b>\$235,311,896</b>	<b>\$538,167,232</b>
<b>System Plan</b>				
	<b>Federal</b>	<b>State</b>	<b>Local/Private</b>	<b>TOTAL</b>
National	\$31,381,317	\$1,175,459	\$5,270,505	\$37,827,281
Regional	\$6,481,449	\$1,109,798	\$3,410,863	\$11,002,110
Local	\$2,947,433	\$1,926,392	\$892,532	\$5,766,357
Limited	\$0	\$579,720	\$857,180	\$1,436,900
<b>STATEWIDE</b>	<b>\$40,810,199</b>	<b>\$4,791,369</b>	<b>\$10,431,080</b>	<b>\$56,032,648</b>
<b>Projects Previously in CIP</b>				
	<b>Federal</b>	<b>State</b>	<b>Local/Private</b>	<b>TOTAL</b>
National	\$190,281,945	\$4,821,350	\$173,966,543	\$369,069,838
Regional	\$35,475,925	\$3,322,942	\$25,024,486	\$63,823,353
Local	\$12,636,207	\$4,516,518	\$14,392,558	\$31,545,283
Limited	\$3,781,450	\$2,417,431	\$11,497,229	\$17,696,110
<b>STATEWIDE</b>	<b>\$242,175,527</b>	<b>\$15,078,241</b>	<b>\$224,880,816</b>	<b>\$482,134,584</b>

Source: NDA, HWS, Wilbur Smith Associates, Inc.

It is important to note that in the process of evaluating costs for each of the airports, certain projects were determined to be highly unlikely due to physical or financial constraints. These included crosswind runway expansion at Fremont, improving the crosswind runway at North Platte, a runway extension at Millard, and runway width increases at Mullen and Stromsburg. If the runways at Mullen and Stromsburg are not widened, the airports will not be able to maintain licenses as public use airports, but

will likely go to private use status. All other project costs identified as part of the NASP as needed for the airports to meet the appropriate classification standards are included in the totals presented in Table 7-2.

## HISTORICAL AIRPORT FUNDING

**Table 7-3** presents a summary of funding for Nebraska airport projects over three time periods: 1947 to 1970; 1971 to 1981; and 1982 through 2000. These periods follow the various federal aid programs available during that period including:

1947-1970	Federal Aid Airport Program (FAA)
1971-1981	Airport Development Aid Program (ADAP)
1982-2000	Airport Improvement Program (AIP)

These programs were discussed in Chapter Two.

The annualized funding presented is simply the total funding divided by the number of years during that period. As depicted, funding has increased dramatically over the past 50 years.

**Table 7-3**  
**Funding Summary for Nebraska Airport Projects**

Period		Total Projects	State	Local	Federal	Total
1947-1970	Total Funding	315	\$4,797,624	\$12,255,603	\$12,780,462	\$29,833,690
	Annualized Funding		\$199,901	\$510,650	\$532,519	\$1,243,070
1971-1981	Total Funding	232	\$7,342,594	\$16,095,471	\$54,384,934	\$77,822,999
	Annualized Funding		\$667,509	\$1,463,225	\$4,944,085	\$7,074,818
1982-2000	Total Funding	532	\$22,342,383	\$38,992,797	\$196,188,875	\$257,524,056
	Annualized Funding		\$1,175,915	\$2,052,252	\$10,325,730	\$13,553,898

Note: The dollars are presented in historical dollars and have not been adjusted for inflation.

Source: Nebraska Department of Aeronautics

## CURRENT FUNDING

Funding for airport improvement projects is an important issue when considering the future needs of Nebraska's aviation system. In order to meet the needs of the communities and users that they serve, airports typically rely on funding sources in addition to their own revenue. The ability of individual airport sponsors to identify funding sources and to successfully obtain funding directly impacts development of those facilities.

In general, funding for capital improvement projects can be generated from the following three major sources: federal, State, and local or private funds. A brief description of each source of funding is presented below.

### Federal

The FAA, in the form of Airport Improvement Program (AIP) grants, distributes federal funds back to the nation's airport system from the Aviation Trust Fund. The Aviation Trust Fund, in its present general form, was originally established in 1970 and has since been amended on numerous occasions. The

purpose of the Aviation Trust Fund is to establish a source of funds, collected only from the users of the nation's airport system that can be used to fund airport improvements at system airports. The current AIP legislation provides both entitlement funds (enplanement, cargo, and apportionment) and discretionary funds for projects that are eligible according to FAA Order 5100.38A, "Airport Improvement Handbook." General types of projects that are eligible to be funded with AIP grants include those projects that:

- ❑ Preserve or enhance safety, security, or capacity of the national air transportation system
- ❑ Reduce noise or mitigate noise impacts resulting from an airport
- ❑ Furnish opportunities for enhanced competition between or among air carriers

**Table 7-4** presents total AIP funding for the fiscal years 1996 through 2000.

**Table 7-4**  
**Historical AIP Funding (Billions)**

	<b>FY 1996</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>	<b>FY 2000</b>
<b>Total AIP Funding</b>	<b>\$1.38</b>	<b>\$1.46</b>	<b>\$1.50</b>	<b>\$1.95</b>	<b>\$1.85</b>

Source: FAA Airports Financial Assistance Division

One of the major sources of funds for the Aviation Trust Fund is a ticket tax levied on each scheduled service airline ticket sold in the U.S. This ticket tax ensures that the users of the nation's aviation system are responsible for funding its improvement.

Some airports with scheduled service receive grant funds each fiscal year based on the number of passengers that they enplaned the prior calendar year. These are referred to as "enplanement" entitlement funds. Commercial service airports are given entitlement funding based on a graduated methodology developed by the FAA that equates to a lower per enplanement entitlement for the airport as that airport's total enplanement level increases. This process is used to offset funding disparity, to the extent possible, that results from the vastly different levels of enplanements that occur at U.S. airports, from less than 10,000 enplanements per year at small airports to tens of millions of enplanements at major hub airports. With AIR-21, discussed in a subsequent section, the minimum passenger entitlement for Primary airports (those airports enplaning at least 10,000 passengers per year) was increased from \$500,000 to \$1 million. Very large airports are capped in terms of entitlement funds based on whether or not they charge a passenger facility charge (PFC) and the amount of the PFC.

Scheduled service airports can also receive cargo funding based on the landed weight of cargo aircraft. This cargo entitlement is also calculated based on a graduated methodology similar to the enplanement entitlement methodology described above. In addition, federal AIP apportionment funds are available to each State's eligible general aviation airports. The FAA allocates funds for general aviation airports in each State based on a formula that considers the size and population of the State. General aviation airports compete for these funds based on the federal priority of each project.

Airports also compete for federal discretionary funds, which are awarded based on priority ratings given to each potential project by the FAA. The prioritization process ensures that the most important and most beneficial projects are the first to be completed, given the availability of adequate discretionary funds.

As a general rule, airport projects that are related to non-revenue producing facilities, such as airfield improvements and land acquisition are eligible for up to 90 percent federal funding. Only those airports deemed as being crucial to the national system, those airports included in the National Plan of Integrated Airport Systems (NPIAS), are eligible for Federal funding. It is important to note, however, that all projects at airports included in the NPIAS are not necessarily eligible for federal funding. In addition, the use of federal AIP funds at any airport requires local matches from State and sponsor/owner sources.

It is important to note that federal funding is limited to development that is justified to meet aviation demand according to FAA standards. Each airport development project, including those recommended in the NASP, will be subject to eligibility and justification requirements in the normal AIP funding process.

## AIR-21

On April 5, 2000, the Wendell H. Ford Aviation Investment and Reform Act for the 21<sup>st</sup> Century (AIR-21) was passed. AIR-21 is complex legislation that contained a number of changes from previous Airport Improvement Program (AIP) budget authorizations undertaken in conjunction with the Aviation Trust Fund. New procedures for distributing funds to the nation's airports were developed in AIR-21, and a number of AIP procedures were revised or amended. The result of the AIR-21 legislation was that the resources available for airport improvement and development projects at U.S. airports were significantly increased. In addition to providing for a significant increase in federal funds available for airport improvement projects at primary commercial service airports, AIR-21 outlined new procedures that will provide States and smaller general aviation airports with dramatic increases in funding that can be used, and/or saved or "bankrolled," to support important projects at smaller general aviation airports.

**Table 7-5** presents a comparison of the FY 2000 (October 1999 through September 2000) AIP budget and the FY 2001 AIR-21 budget. As the table shows, significant increases were seen in all areas of funding.

**Table 7-5**  
**Comparison of FY 2000 and 2001 (AIR-21) AIP**

<b>Fund Category</b>	<b>FY 2000 AIP</b>	<b>FY 2001 AIP (AIR-21)</b>
Entitlements	\$1,100,512,335	\$2,004,840,795
Small Airport Fund	\$142,204,990	\$274,936,625
Discretionary Set-Asides	\$231,147,417	\$355,758,049
<u>Other Discretionary</u>	<u>\$377,135,258</u>	<u>\$564,464,531</u>
<b>TOTAL</b>	<b>\$1,851,000,000</b>	<b>\$3,200,000,000</b>

Source: House Transportation and Infrastructure Committee Staff

As shown in Table 7-5, the AIP funds available to support airport projects at U.S. airports increased from approximately \$1.85 billion to approximately \$3.2 billion. The major funding changes identified in AIR-21 are summarized below:

- ❑ Minimum passenger entitlement for Primary airports (those airports enplaning at least 10,000 passengers per year) was increased from \$500,000 to \$1 million.
- ❑ Total entitlement amounts for cargo activity (only airports with over 100 million pounds of gross landed weight annually) increased from 2.5 percent of AIP funding to 3 percent.
- ❑ When the AIP level is authorized at \$3.2 billion or more, States' apportionment increases to 20 percent of the budget, or approximately \$640 million at the \$3.2 billion level. A general aviation entitlement program was implemented in which general aviation airports received the lesser of \$150,000 or 1/5<sup>th</sup> of the most recently published estimates of 5-year costs under the NPIAS. The total of these general aviation entitlements are subtracted from the overall State apportionment dollars for that fiscal year and the remaining amount is apportioned to each state.
- ❑ The maximum Passenger Facility Charge (PFC) was increased from \$3.00 per enplanement to \$4.50 per enplanement. Large and medium hub airports that increase their PFC to \$4.50 forego 75 percent of their federal passenger entitlement monies and must meet a variety of specific provisions identified in AIR-21.

The changes described above have a significant impact on total funding available at the federal level, increasing the AIP budget from approximately \$1.85 billion to \$3.2 billion. In addition to the overall budget increase, many of the changes identified in AIR-21 directly impacted airport funding at the State and local levels.

AIR-21 is a multi-year plan that includes fiscal years 2001 through 2003. This is important because it allows individual airports and States to plan for airport improvements over the three-year period, instead of the single-year periods included in the previous AIP authorizations. Because of this change, airports will be able to implement multi-year development plans that had previously been impossible because of uncertainty about future funding levels. In addition, general aviation airport entitlements can be saved over the three-year period to allow these smaller airports to “bankroll” their apportionment for use on major projects. In general, these new AIR-21 provisions allow NDA to implement a multi-year development plan at individual airports and for the system of airports, and therefore gives NDA better ability to meet not only airport-specific improvement goals, but also system-wide goals.

However, the introduction of GA entitlements had an unexpected effect on Nebraska's state apportionment. Because the GA entitlements are funded from the state apportionments, Nebraska's state apportionment increased by only \$190,553 (4 percent) from Fiscal Year (FY) 2000 to FY 2001. For FY 2002 and FY 2003, Nebraska's state apportionment is expected to decrease. In comparison, the overall AIP funding increased 73 percent. While 28 Nebraska airports may receive annual GA entitlements up to \$150,000, many of these airports have significant needs that far exceed \$150,000. With reduced state apportionment, it will be much more difficult to fund large projects at general aviation airports.

## State Funding

Nebraska has supported airport development throughout the State through funding of eligible projects since 1940. Aviation fuel tax revenues are the primary source of State grant and loan funds provided by the Nebraska Department of Aeronautics (NDA). Aviation fuel taxes in Nebraska were enacted in 1945 at 5 cents per gallon on fuels purchased for and used in aviation. Aviation users could apply for a 2.5-cent per gallon refund. In 1985, the refund was repealed, the jet fuel tax was reduced to 3 cents per gallon and the aviation gasoline tax remained at 5 cents per gallon. Taking the refund into account, the aviation

fuel taxes have remained the same in Nebraska since 1945. In comparison to other states, the average tax on jet fuel is 5.8 cents per gallon and the average tax on aviation gasoline is 12.0 cents per gallon.<sup>1</sup> This includes sales tax where applicable and uses the current fuel tax prices available through national surveys. No specific State aviation tax changes are recommended as part of this plan.

A few airport projects are funded, with FAA approval, from the interest earned by a trust fund established from the sale of State airfield property. The FAA also reimburses the State for project management of AIP projects. The State has provided an average of \$1 million annually in grants to airports. The State has also provided an average of almost \$500,000 annually in hangar loans and about \$55,000 annually in fuel storage loans. Approximately \$9.3 million was received from the FAA for Federal Fiscal Year 2000 from AIP grants, including \$4.4 million for the primary airports, \$513,000 for the non-primary airports, \$4.1 million for general aviation airports, and \$250,000 for the NASP.

In the past, expenditures by the State have been guided by general rules wherein no more than \$100,000 be applied to any airport in a given year, or \$200,000 for State-local runway improvement projects only. The State also generally matches FAA grants by 3 percent. The State has also attempted to fund projects at all levels of airports, if possible, to avoid concentrating all funds on larger, busier airports.

Additional policy related to State-local projects includes an 80 percent grant available to fund grading, paving, overlaying, and lighting of runways, taxiways, and aircraft parking aprons, along with obstruction removal, ALPs, and visual aid/lighting. A similar policy with 50 percent State funds is used for State-local projects for access roads, auto parking lots, land, easements, and terminal buildings. Seventy-five percent State funds are available for seal coats on runways, taxiways, and aprons.

Two loan programs are administered by NDA. The first is a revolving hangar loan program that provides no-interest loans for hangar construction or purchase. The loans can be for 70 percent of the total cost, at the sponsor's discretion. The loans must be repaid within 10 to 15 years. The maximum loan per airport that can be outstanding is \$300,000. Priority is given to airports with less than 20 aircraft storage units. There is \$3,768,620 set aside in the revolving hangar loan fund.

A second loan program involves no interest loans for aviation fuel storage tanks and appurtenances. Loans are for 70 percent of the costs up to \$50,000 maximum per airport and must be repaid in 10 years. There is \$336,500 set aside for the fuel storage loan fund.

According to data compiled by the National Association of State Aviation Officials (NASAO) on State aviation funding for fiscal year 2000, the majority of the States obtain funding from more than one source. The most noted source was aviation fuel taxes, followed by general fund dollars. Some States noted that they receive monies from highway taxes, aircraft sales and use taxes, bonds, and other sources. Most of the States also indicated they provide State funding for NAVAIDs, airfield maintenance, and hangar construction, including Nebraska. Specifics on aviation fuel tax percentages and the exact sources of "other" funding were not provided.

## **Local and Private**

Local public airport sponsors such as counties, cities, and authorities are responsible for costs associated with airport development projects that remain after federal and State shares have been applied. Historically, in Nebraska, the local share of federally funded projects has been 7 percent after the 3

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<sup>1</sup> According to Nebraska Department of Aeronautics

percent State share and the 90 percent federal share was applied. For other projects, the local share has varied from 20 percent to 50 percent depending on the nature of the improvement after the State funds have been applied.

Airport Authorities operate many Nebraska airports. These authorities are independent from the city or county government in raising capital for improvement projects. These authorities can condemn property and issue bonds with no approval from the city or county that created them. They can also assess property taxes with the approval of the city or county government that created them. The property taxes are limited to 3.5 cents per \$100 valuation, except city authorities can increase this to 7 cents with approval of the city's governing body or approval by the voters.

Local government funding of airport development projects is derived from the following three basic sources:

- ❑ General Fund Revenues
- ❑ Bond Issues
- ❑ Airport Generated Revenues

Of these, general fund resources and general obligation bonds are by far the most common funding sources. Revenue bonds supported by airport generated revenues are seldom used because most general aviation airports do not earn enough money to pay operating expenses and the debt service of capital funding requirements.

### **General Fund Revenues**

Capital development expenditures from general fund revenues have been somewhat difficult to obtain in recent years. One reason for this difficulty is the seemingly universal shortfall in local general fund revenues. Budgetary problems have created an environment where local funding is uncertain. The amount of general fund support of airport improvement projects varies by airport and is based upon the local tax base, priority of the development project, historical funding trends, and, of course, local attitudes concerning the importance of aviation.

### **Bond Issues**

Airport authorities can issue bonds without approval from the city or county. However, they must use their own revenue to repay the bonds. Airport revenue and property tax revenue are typically used to repay these bonds. Authorities may levy no more than 3.5 cents per \$100 valuation, except city authorities can increase this to 7 cents with the approval of the city's governing body or approval by the voters.

A city or county operates some airports, with no airport authority. For these airports, bond issues funding the local share of airport development projects must compete with bond issues for other types of community improvements, such as schools, highways, and sewer systems. As with the general fund apportionment, bond issues supporting airport development depend greatly on the priority assigned to such projects by the local community.

**Airport-Generated Revenues**

Airport-generated revenues for general aviation airports are those revenues associated with goods and services that the airport provides. After expenses, net revenues can be used to pay the local share of capital improvement projects. Historically, most general aviation airports have not been able to realize enough revenue to completely cover their expenses and, therefore, operate at a deficit. As a result, general aviation airports do not expect generated revenues to fund the local share.

Commercial service airports, in most cases, do generate enough revenue to cover expenses and realize profits to fund the local share of capital improvement projects. These revenue sources typically come from landing fees, space rentals, auto parking, and fees and commission on gross sales.

Another recently enacted means for air carrier airports to generate revenue for eligible capital improvement projects is the implementation of a Passenger Facility Charge (PFC). The PFC program is part of the Aviation Safety and Capacity Expansion Act of 1990, enacted November 5, 1990. The ruling under this act requires the Department of Transportation to issue regulations under which a public agency may be authorized to impose an airport passenger facility charge of up to \$4.50/enplaned passenger at a commercial service airport it controls. The proceeds from such PFCs are to be used to finance eligible airport-related projects. PFC-generated revenue can be used to pay all or part of the allowable costs of an approved project; it may be used to pay debt service and financing costs incurred on that portion of a bond issued to carry out approved projects; it may be used in combination with airport grant funds to accomplish an approved project; or it may be used to meet the non-Federal share of the cost of projects funded under the Federal airport grant program.

**Private Funds**

A final source of funds for airport development is the private sector. For example, privately owned airports must make up any operating deficits with private funds, if they are not designated reliever airports and have agreed to accept federal funding assistance. These airports typically must fund all capital development out of private resources. Since 1995, the state has been authorized to provide grant and loan funds to certain privately owned public-use airports. To qualify, these airports must have at least one paved runway, be engaged in the retail sale of aviation gasoline or aviation jet fuel, and possess the facilities for the sheltering, servicing, or repair of aircraft. Currently only North Omaha Airport and Martin Field in South Sioux City meet these qualifications.

At publicly owned airports, items such as storage and maintenance hangars, fuel systems, and pay parking lots are not eligible for federal or State grant funding because they are revenue-producing sources, which can generate rental income for the airport. If a local airport sponsor does not wish to undertake the responsibility of financing, constructing, and managing hangar construction, a fixed-base operator is likely to build these facilities provided that he or she has the long-term lease agreement and the financial market allows the project to be economically feasible.